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ABSTRACT

Developed in response to the need for training and materials related to emergency vehicle operations, this guide is designed to aid in the implementation of recruit, inservice, or specialized training for an emergency vehicle operator. Following the introduction, an overall discussion of material to be covered in the classroom is provided. After the classroom instruction section, the guide is divided into three sections on practical application--law enforcement, fire, and emergency medical services--which present the different driving skills needed by the employees of these three agencies, due to the variations in vehicle characteristics and intended uses. Each of these three sections is self-contained, designed to be used in conjunction with the classroom instruction section. All three practical application chapters--law enforcement, fire, and emergency medical services--include specific details regarding the actual maneuvers to be performed on the driving range, illustrations indicating the general physical layout of each exercise, guides for grading procedures, and common student problems of which the instructor should be aware. In the final chapter, procedures for physically setting up an emergency vehicle operation curriculum (EVOC) program are described. Also included are a glossary of important terms, and a bibliography of texts, pamphlets, films, and other references. Driver evaluation forms are provided in Appendix. (WL)

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VIRGINIA EMERGENCY VEHICLE OPERATOR'S CURRICULUM GUIDE

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VIRGINIA EMERGENCY VEHICLE OPERATOR'S CURRICULUM GUIDE

This guide was prepared by the Highway Safety Training Center at Virginia Commonwealth University, Richmond, Virginia. Funds were provided by contract with the Virginia Division of Highway Safety. The policies and conclusions recommended herein are the result of research on the part of the authors and not necessarily those of any specific agency or of the State of Virginia.

Copies of the Virginia Emergency Vehicle Operator's Curriculum Guide can be obtained through the Publications Office, Virginia Highway Safety Division, 300 Turner Road, Richmond, VA 23225 (Phone: 804-276-9600).

1975

FOREWORD

In response to considerable statewide demand for training and materials related to emergency vehicle operations, the Highway Safety Division of Virginia contracted in 1974 with the Highway Safety Training Center at Virginia Commonwealth University to develop a basic curriculum guide for an Emergency Vehicle Operator's Course (EVOC).

In the fall of 1974, a statewide Advisory Committee was formed to oversee the project's direction and to serve as a liaison with the agencies which will be using the document. The committee, which was instrumental in assisting with the development of this guide, was composed of representatives of law enforcement, fire, and emergency medical services agencies.

The Virginia Emergency Vehicle Operator's Curriculum Guide is designed to serve as a guide to the implementation of recruit, in-service, or specialized EVOC training. In addition, it should be useful as an administrative tool in terms of policy-making as it relates to the operation of motor vehicles under emergency conditions. Following the document's distribution, a system of regional training delivery will be established, using a core of qualified instructors prepared to set up EVOC training throughout the state.

The material contained in this publication is presented in a manner which can be adapted to individual agency operations. Separate sections have been set aside for discussion of the curriculum as it applies specifically to law enforcement, fire, and emergency medical services. As such, the guide will be flexible enough to meet the varying requirements of public safety agencies throughout Virginia.

ACKNOWLEDGEMENTS

The Highway Safety Training Center wishes to express its gratitude to all local and state law enforcement, fire, and emergency medical services agencies, and others who assisted with and contributed toward the progress of this guide. The following individuals have been especially helpful throughout the guide's development, and it is with considerable appreciation that they are listed here.

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CHAPTER ONE

INTRODUCTION

CHAPTER ONE

INTRODUCTION

A basic, essential component of employment in law enforcement, fire fighting, or emergency medical services involves the operation of a motor vehicle under emergency conditions. In fact, driving an emergency vehicle may be one of the most hazardous aspects of law enforcement, fire, or emergency medical service occupations.

Whether pursuing a suspected felon, rushing to the scene of a multiple-alarm fire, or delivering a heart attack victim to a hospital, the operators of emergency vehicles are often responding to life-and-death situations. Under such pressure, it is easy to become obsessed with the need to travel rapidly, disregarding speed limits and violating traffic control devices. However, such travel can prove more dangerous to the emergency vehicle operator and the motoring public than the cause of alarm to which the operator is responding. This fact is reflected in the National Safety Council's 1973 figures, which indicate that about 26,000 emergency vehicles were involved in motor vehicle crashes, some 300 of which were fatalities.[1]

Approximately 37,000 persons operate emergency vehicles in Virginia, with about 4,200 new drivers employed annually.[2] Yet, despite the inherent dangers involved in this type of driving, few agencies offer field training under test conditions for operators of emergency vehicles. Although a few agencies in Virginia incorporate some aspects of emergency vehicle operation into their classroom training instruction or offer practical exercises on a driving range, the vast majority provide no formal, structured curriculum designed to improve driving skills under emergency conditions. There are no state regulations governing this vital training in Virginia.

In recent years, crashes in Virginia involving emergency vehicles have totalled over 1,000 annually.[3] Although the total number of crashes has been reduced since 1972, the number of personal injuries has increased. This indicates that while the number of emergency vehicles involved in crashes has declined, the severity of the crashes has drastically increased. In addition to the personal hardships resulting from injuries or fatalities, the economic losses resulting from emergency vehicle-related crashes can only be estimated, but undoubtedly are substantial. The following table indicates the number of crashes involving emergency vehicles in Virginia, the annual percentage change in each category as compared to the preceding year, and the estimated economic losses.

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[1] National Safety Council, Accident Facts (Chicago, Illinois: National Safety Council, 1974), p. 56.

[2] Emergency Vehicle Driver Training in Virginia (Richmond, Virginia: Wilbur Smith and Associates, 1973), p. 1.

[3] Virginia Crash Facts (Richmond, Virginia: Department of State Police, annual reports).

	Property damage	Personal injury	Fatal	Total
1972				
Number of crashes	865	255	9	1,129
Percentage change	+ 10.6%	+ 3.6%	+ 33.3%	+ 9.2%
Economic losses	$432,500	$1,785,000	$2,475,000	$4,692,500
1973				
Number of crashes	803	269	8	1,080
Percentage change	- 7.2%	+ 5.5%	- 11.2%	- 4.5%
Economic losses	$401,500	$1,883,000	$2,200,000	$4.484,500
1974				
Number of crashes	760	296	8	1,064
Percentage change	- 5.4%	+ 10.0%	0	- 1.5%
Economic losses	$380,000	$2,072,000	$2,200,000	$4,652,000

SOURCE: Virginia Crash Facts (Richmond, Virginia: Department of State Police, corresponding years).

Documentation of cost effectiveness for efforts to provide emergency vehicle operator's training is readily available. One such study was conducted at the General Motors Proving Grounds, where, eighteen months after training, analysis of data on injuries, days and wages lost, and vehicle damage showed that the total costs for the untrained group were ten times that of those who received training. In addition, the average cost per collision was five times greater for the untrained group.[4] Another survey, conducted by the National Safety Council, found that persons with no driver training experienced sixty-two percent (62%) more crashes than expected, while those who had practiced track or skid pan training experienced twenty-six percent (26%) less crashes than expected.[5] Moreover, after the U.S. Park Police in Washington, D.C., conducted a series of driver training schools for its officers, that agency's 1972 figure of 44.7 accidents per million miles driven decreased during the first quarter of 1974 to a rate of 8.17.[6]

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[4] Advanced Driver Education Course Training Manual (Milford, Michigan: General Motors Proving Grounds, 1971), p. 3.

This document was developed in an effort to reduce the hazards of operating a motor vehicle under emergency conditions in Virginia. It is designed to serve as a guide for the implementation of a curriculum for emergency vehicle operators. Used properly, it should contribute significantly to the goal of reducing the injuries, deaths, and property damage resulting from inappropriate driving under emergency conditions.

(A) PROGRAM DEVELOPMENT

The curriculum presented in this manual is designed to be flexible in order to accommodate the varying needs and resources of agencies offering emergency vehicle operator's training in the State of Virginia. The length of the program and size of the class will depend upon how many maneuvers are to be performed, instructional and evaluative procedures, attributes of the facilities, and number of instructors and vehicles available.

Before considering course implementation, the following minimum standards must be adhered to:

- Establish a minimum of fifteen (15) hours for any one course. (Note: This includes only classroom and range instruction, not time required for meals, breaks, etc.)
- Provide each student with a minimum of three (3) hours of classroom instruction, or a maximum of five (5) hours. (Note: This does not include ten minute breaks between class hours. If breaks are to be provided, three hours and thirty minutes minimum or five hours and fifty minutes maximum would have to be set aside).
- Provide each student with a minimum of four (4) hours of actual on-range driving experience.
- Insure the presence of no less than two qualified emergency vehicle operator's course instructors throughout the program.
- Establish a maximum class size of fifteen (15) students.

The following information is offered to provide some examples by which the instructors will be able to compute the maximum numbers of students for each class. The formula offered is based on a ratio which takes into consideration the following:

--Number of instructor/vehicle combinations available. (The formula assumes one instructor is available per vehicle, except in the case of only one vehicle, wherein the minimum of two instructors is necessary).

--Total course hours scheduled. (This includes only classroom and range instruction time, not time required for meals, breaks, etc.)

--Total course hours minus 20% classroom instruction time (i.e., 80% on-range driving time).

--Minimum hours behind the wheel per student (i.e., four hours).

Once the instructors establish these figures, they will be able to determine the maximum number of students which the course can accommodate. The instructor group can establish a program schedule on the basis of instructor/vehicle combinations available, with one instructor per student needed during every hour that the students are actually engaged in the various driving experiences.

Total course hours	On-range driving hrs.		Instructor/vehicle combinations available				Driving hours per student		Maximum number of students
15	12	x	1 *	=	12	÷	4	=	3
20	16	x	1 *	=	16	÷	4	=	4
24	19.8	x	1 *	=	19.8	÷	4	=	5
15	12	x	2	=	24	÷	4	=	6
20	16	x	2	=	32	÷	4	=	8
24	19.8	x	2	=	39.6	÷	4	=	10
15	12	x	3	=	36	÷	4	=	9
20	16	x	3	=	48	÷	4	=	12
24	19.8	x	3	=	59.4	÷	4	=	15

* Assumes only one vehicle available, but the minimum two instructors.

(B) SELECTION OF INSTRUCTORS

In view of the serious nature of an Emergency Vehicle Operator's Course, it is essential that instructors be selected carefully. Driving under the high speeds and performing the difficult maneuvers included in this course calls for the guidance of specially qualified instructors. Sound academic knowledge and the capability to deliver an interesting lecture are not sufficient qualifications for the EVOC program instructor.

Emergency vehicle operation instruction is a unique endeavor, requiring refined skills in addition to technical knowledge. With the risk of injury always present, only exceptionally mature individuals who have demonstrated proper attitudes, good judgment, and appropriate driving capabilities should be considered as instructors. Previous or current work experience in some aspect of public safety will enable the instructor to better relate to the in-service student body. In addition, past experience in driver education, as well as a commitment to highway safety principles, would also be desirable.

But beyond all necessary personal characteristics, it is imperative that any person designated to teach this course complete some type of similar emergency vehicle operator's course. Only through the on-site experience gained by actual participation in such a program can one become completely cognizant of the serious responsibility involved in offering EVOC instruction. An untrained instructor can do more harm than not offering the course at all. Therefore, attendance at a recognized EVOC instructor's school should be a basic, mandatory requirement of all persons being considered as future EVOC instructors.

(C) STUDENT PREREQUISITES

Since the equipment and facilities needed to offer an emergency vehicle operator's course involve a substantial financial investment, the per-student costs are relatively high. In order to achieve maximum cost effectiveness, therefore, EVOC students should be drawn from currently-employed public safety personnel, particularly those whose primary responsibilities involve the operation of a motor vehicle, often under emergency conditions.

In law enforcement agencies, officers are hired with the expectation that they will perform driving tasks, so most, if not all, enforcement officers would represent candidates for this type of training. (However, an enforcement agency may want to take an officer's performance during this course into consideration when making future job assignments). In fire and emergency medical services, there is greater latitude to select the most motivated personnel with the greatest skill potential and emotional stability, since not all employees of these agencies are required to operate a vehicle as part of their job assignment.

In all cases, however, the seriousness of this course must be stressed to students in advance of their enrollment. It must be made clear that students will be expected to display mature attitudes and common sense at all times, and that any unacceptable or dangerous behavior will be cause for dismissal from the class.

(D) USING THIS GUIDE

In this document, the instructor will first find an overall discussion of material to be covered in the classroom. But it should be noted that this discussion is of a general nature, and it will therefore be incumbent upon the instructor to expand upon the basic material presented, provide additional details, and offer pertinent examples of the theories under consideration.

Following the classroom instruction phase of the training, the manual is divided into three sections on practical applications: law enforcement, fire, and emergency medical services. This has been done in order to accommodate the different driving skills needed by the employees of these three agencies, due to the variations in vehicle characteristics and intended uses. Each of these three sections is self-contained, designed to be used in conjunction with the previously-described classroom instruction section. All three practical application chapters--law enforcement, fire, and emergency medical services--include specific details regarding the actual maneuvers to be performed on the driving range, illustrations indicating the general physical layout of each exercise, (measurements are suggestions only), guides for grading procedures, and common student problems of which the instructor should be aware.

In the final chapter of the guide, procedures for physically setting-up an EVOC program are described. Also included are a glossary of important (if unfamiliar) terms, as well as a bibliography of texts, pamphlets, films, and other references. Driver evaluation forms are provided in the Appendix.

Throughout the development of an EVOC program, however, it should be kept in mind that the material presented in this manual is merely a guide and will not compensate for lack of instructor qualifications. The document is not meant to be all-inclusive of every detail which should be explained to the students, and local adaptations will obviously be necessary in view of the time and physical facilities available.

CHAPTER TWO

CLASSROOM INSTRUCTION

NOTES/REFERENCES

CHAPTER TWO

CLASSROOM INSTRUCTION

INTRODUCTION

This section of the manual is designed to be used in the classroom before involving the students in the actual operation of a motor vehicle on the driving range. It is a self-contained instructional tool insofar as each of the topics to be covered in the pre-driving instruction phase is mentioned and described. However, additional research and knowledge on the part of the instructor will be essential in order to present these topics in the degree of detail necessary for effective student comprehension and absorption.

COMPONENTS OF THE TRANSPORTATION SYSTEM

The transportation system is composed of three major facets: the driver, the vehicle, and the environment. In this segment of classroom instruction, the student will be familiarized with their roles, capabilities, limitations, and interactions.

Most motor vehicle operators consider themselves to be "good drivers" and view driving as a simple task. But in reality, operation of a motor vehicle is a complex and complicated function involving the driver, the vehicle, and the driving environment. How the vehicle is operated and whether it arrives at its destination without mishap are determined by the interaction of these three elements.

The very nature of operating a vehicle under emergency conditions demands not only compliance with inherent legal, ethical, and moral responsibilities, but also accurate assessment of personal, vehicular, and environmental capabilities and constraints. Beyond merely understanding the factors which influence the quality and safety of these components, the driver must possess the judgment and skill necessary in order to translate this information into appropriate performance on the road.

NOTES/REFERENCES

(A) THE DRIVER

STUDENT PERFORMANCE OBJECTIVES

Upon completion of this phase of classroom instruction, the student should be able to list and discuss:

--The psychological aspects of driving, including special psychological and emotional qualifications required for emergency vehicle operation.

--Physiological aspects of driving, including specific physical qualifications required for emergency vehicle operation.

--A method for systematic analysis in emergency vehicle operation.

--Legal, moral, and ethical issues related to emergency vehicle operation.

--Steps involved in a proper vehicle check.

--Significance of appropriate pre-driving habits.

DRIVER'S ROLE IN THE TRANSPORTATION SYSTEM

Numerous human factors interact to determine how a person operates a motor vehicle. Under normal conditions, the human being can effectively control the vehicle, being flexible enough to identify important information, make estimates and judgments, and execute decisions in relatively complex situations. In fact, since controlling a motor vehicle generally does not demand the full resources of the driver, a common misconception regarding the ease of the driving task exists among the motoring public. If an extremely complex or demanding situation does arise, and the individual does not have the reserve of skill, knowledge, or judgment necessary, a crash may result.

Operation of an emergency vehicle often involves excessive speeds, driver stress, and danger to life and/or property. Therefore, driving a vehicle under emergency conditions represents a potentially hazardous situation requiring extra-sensitive judgment and refined driving capabilities.

NOTES/REFERENCES

(1) Psychological Aspects of Driving

Acquiring and processing necessary data and information involves:

--Vision
Approximately 90-95% of incoming data are supplied by vision. This includes acuity, depth perception, peripheral vision, color perception, and night vision.

--Hearing
This enables an individual to locate the source of sound.

--Touch and kinesthetic sense
Body sense is important in detecting and identifying vehicle dynamics in emergency situations.

--Perception
The senses provide an unmanageable amount of data. Perception is the process of identifying those factors important to the task involved.

--Habits
These represent behavior patterns developed through repetition and not requiring active mental thought. (e.g., Closing car doors, putting key into ignition, fastening seat belts, and stopping at red lights).

--Attitudes and emotions
The predisposition to perceive and perform in a certain manner when a particular object or situation is encountered is a significant factor in driving. Prejudice and bias are specific types of attitudes and are usually based upon emotional factors. The role of attitudes and emotions in the driving task cannot be overemphasized, since these represent possibly the most critical human factors involved in emergency vehicle operation.

--Values
These are concepts or beliefs so strong that they govern all other planned behavior (e.g., belief in law or concern for life).

--Stress
Mental or physical tension accompanied by a condition

NOTES/REFERENCES

of excitement, nervousness, or apprehension is a critical ingredient in the emergency driving process.

--Judgment and knowledge
These represent decision-making and the facts upon which decisions are based. They are determined by data received, quality of perceptions, habits, attitudes, and values.

--Execution
Based upon psychological aspects and physical qualities, execution is the transfer of psychological processes and decisions into appropriate physical responses.

(2) Physiological Aspects of Driving

Under normal driving circumstances, even if the driver's physical condition is somewhat deficient, it may be adequate for control of the vehicle during uncomplicated situations. However, driving in an emergency requires physical condition capable of coping with demands made by complicated situations and must include substantial physical reserve for extremely complex occurrences.

Chronic conditions and impairments which can severely inhibit proper motor vehicle operation, particularly under emergency conditions include:

--Inadequate vision.

--Faulty hearing.

--Chronic medical conditions, such as diabetes, chronic fatigue (narcolepsy), cardiovascular conditions, and epilepsy. (Persons with such medical impairments often exhibit a crash risk factor twice that of the average driving population and should not be permitted to operate an emergency vehicle).

--Transient factors, such as stress (especially applicable to driving under emergency conditions), emotions, fatigue, drugs, and alcohol.

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--Coordination and reaction capabilities, such as body muscle sensory coordination, kinesthetics, and reaction time. These require a substantially higher degree of refinement when operating an emergency vehicle.

(3) Sensing, Identifying, Predicting, Deciding, and Executing[1]

In order to function safely and effectively, the emergency vehicle operator must first obtain a clear, complete, and accurate picture of the existing situation. This picture is obtained by using the senses of sight, sound, smell, movement, balance, and feeling.

Such sensory information can more systematically and efficiently be processed if the driver performs certain mental and physical functions, known collectively as the SIPDE process--sensing, identifying, predicting, deciding, and executing.

Basically, implementing this process requires that the driver first sense four major traffic events: traffic control devices, highway settings, other road users, and the driver's own vehicle. After sensing these events, the operator can identify the objects in the traffic scene. Then, based upon knowledge and past experience, the driver can predict various potential situations, decide what action to take when the situation does arise, and execute the appropriate maneuver. A more detailed description of each of the components of the SIPDE process follows.

- Sensing

The first step in utilizing the SIPDE concept is that of searching and scanning the vehicle and traffic environment for information or cues. This can be accomplished through systematic viewing, which involves three steps: Fixating on the center or travel path;

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[1] The principles contained in this chapter have been condensed from Richard W. Bishop et al., Driving: A Task Analysis Approach (New York: Rand McNally and Company, 1975).

NOTES/REFERENCES

searching and scanning the traffic scene; and checking mirrors and instruments.

--Fixating on the center or travel path

The driver maintains road position by using a reference point as far ahead on the road as possible and steering toward it. After searching and scanning the traffic scene, mirror, and instruments, the eyes return again to the reference point. (When backing a vehicle, eyes should focus on the backing point until the vehicle stops at that point).

--Searching and scanning the traffic scene

This involves searching out events which could affect vehicle operation and is accomplished by systematically scanning road conditions, weather factors, pedestrians, merging traffic, parked cars, etc. Eyes should be kept moving. Although moving eyes do not perceive everything they come into contact with, fixation in too few places or in one place too long will not provide adequate information.

--Checking mirrors and instruments

Along with the search and scanning of the traffic scene, periodic checks should be made of the vehicle's mirrors and instrument panel. In this way, the driver avoids becoming so fixated with circumstances external to the vehicle that vital factors are overlooked.

--Visual lead time

An additional vital element of the sensing process concerns the time and space available for response to any hazards. An extremely hazardous potential is created by the emergency vehicle's high rate of speed, combined with the fact that it does not always adhere to the "expected" legal pattern of traffic flow. Recognition of visual lead time is extremely important and is acquired by centering on the travel path. The driver can determine whether sufficient lead time exists by using the "twelve second rule." (It should be noted that

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emergency conditions may require a greater amount of lead time, however). The twelve second rule is used by selecting a fixed object, such as a bridge or a sign, near the reference point. If the vehicle passes the fixed object before twelve seconds have elapsed, (counting "one thousand one, one thousand two. . . . one thousand twelve"), the driver would not have had sufficient visual lead time to respond to a hazard occurring at that point.

In summary, the entire sensing process should become a routine, producing information about traffic control devices, the highway setting, other road users, and events within the driver's own vehicle.

- Identifying

The second step in SIPDE is that of identifying from all data supplied through the sensory process that which is important to the driving task. Many drivers have not learned to identify elements in the traffic scene which serve as visual cues to warn the driver of a sudden change and potential hazard before they occur. (For example, exhaust from parked cars; a vehicle with wheels turned away from the curb; feet and legs of a pedestrian visible beneath a parked car). The identification process consists of:

--Identifying individual factors or events.

--Determining what the event or factor is doing.

--Understanding how the event or factor and its activity or potential activity might affect the emergency vehicle, as well as other traffic.

- Predicting

The third element in SIPDE is that of predicting the future activity in the traffic scene important to the safe and effective operation of the emergency vehicle. Making accurate predictions about the traffic environment requires relating the data, events and factors identified through the sensory process, (assuming that they are correct), to past experience and knowledge. Thus, predicting involves recognizing immediate and potential hazards and evaluating risks.

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- Deciding

The fourth step in SIPDE is deciding how to direct and control the emergency vehicle's involvement in the traffic environment. Possibly the most important factor in the decision-making process, (or in driving in general), is maintaining a proper "time and space cushion" around the vehicle. Especially in emergency vehicle operation, where high speeds may be involved, the driver must be aware of the minimum possible distance in which the vehicle could safely stop. Risk increases in most traffic environments when vehicle speed causes the time and space cushion to become increasingly ineffective (i.e., when there is neither time nor distance within which to sense, identify, predict, decide, and execute vehicle control).

- Executing

The last element in SIPDE involves carrying forth the decision which has been reached, based upon the other steps in SIPDE. Proper execution is based upon good decisions, skills, and physical condition.

(4) Perceptions and Judgment

The law of Virginia (46.1-225) provides that, upon the approach of an emergency vehicle, the driver of any other vehicle will pull to the right side of the road and stop until the emergency vehicle passes. The law is stated clearly and precisely. Implications arise, however, when the emergency vehicle is not seen and/or heard.

The senses of sight and hearing are very complex, and the driver of an emergency vehicle sometimes has difficulty understanding why the motorist cannot see or hear the vehicle, despite flashing lights and siren. Therefore, this section of the manual is designed to familiarize the student with some very real problems relative to visual and hearing perceptions of the driving public and how these can affect reaction to an emergency vehicle.

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(a) Visual Perceptions[2]

The eye is made up of two visual systems, each specialized for a different function, combined into one. Each system has its own kind of receptor cells, called rods and cones. The cones function only in daytime and are responsible for color vision and sharpness of vision. At night, the second system comprised of the rods becomes functional. Night vision does not respond to the color of objects. As the eye becomes adapted to the dark, red is the first color to leave the spectrum and the last to return. This is especially important to those who drive red emergency vehicles. Also important for night driving is glare recovery time. When an approaching vehicle or roadside sign is passed by a vehicle at night, it will take the driver's eye approximately ten seconds to readjust to the dark. This recovery time increases with age. At 50 miles per hour, the distance traveled during a second is approximately 75 feet. Thus, in ten seconds, the vehicle has traveled about 750 feet before the driver has fully regained night vision. At 80 miles per hour, a vehicle travels approximately 120 feet per second, or 1200 feet in ten seconds. At 80 miles per hour, therefore, the vehicle travels almost one-fourth of a mile before the driver's eyes readjust.

Another phenomenon of night vision is called the "moth effect" or phototropism. This is the tendency for the eye, especially when fatigued, to be attracted to light. This is beneficial knowledge to the emergency vehicle operator for flare location. Flares should be placed well down the road from the scene of an accident, so that proper protection of the scene is guaranteed.

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[2] Condensed from Floyd L. Ruch, Psychology and Life (Chicago, Illinois: 1963), pp. 233-290.

NOTES/REFERENCES

(b) Sound Perceptions[3]

The ear, like the eye, is a very sensitive and complicated organ. The ability to locate sound is due almost entirely to the fact that humans have two ears. A sound coming from an object on the left strikes a person's left ear before it does the right one. Because it is stronger in the left ear, the person is able to determine that the origin of the sound is coming from the left.

A condition which is characteristic of all humans is the "zone of confusion." Beginning at each ear, at approximately a 10° angle, and extending outward in a cone shape, this is an area in which one is unable to distinguish sound origin. The farther away from the motorist that the emergency vehicle is, the more difficult it will be for the driver to determine the direction from which the emergency vehicle is coming, because of the cone effect. As the emergency vehicle approaches, the cone shape will lessen, and the motorist will be able to determine direction more readily. If the sound changes (e.g., by using an alternate siren), the chances of hearing the emergency vehicle will be greatly increased. This zone of confusion is a physical characteristic which limits driver response, and all emergency vehicle operators should be aware of it.

Another obscure physical characteristic of all human hearing is the "median plain of sound." This is a condition which also limits humans from determining sound origin. The condition arises because the sound waves from the source affect both ears the same. The sound reaches each ear simultaneously and with the same strength. It is therefore impossible to determine the origin of the sound without moving the head. By moving the head, the ear position, in relation to the sound origin, changes, and the person will then be able to determine direction, since the sound wave will be stronger in one ear.

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[3] Ibid.

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If an emergency vehicle is approaching directly from the front or the rear, it is very difficult for the motorist to determine sound origin because of these innate physical limitations, not because of inattention or recklessness. In addition, it must be kept in mind that a person may not respond to a siren because of total deafness, partial loss of hearing in one or both ears, or internal vehicle noises and distractions.

Beyond preoccupation, inattention, or physical limitations, a driver may not respond to emergency warning devices for a number of other reasons. For example, the emergency vehicle operator may be "tailgating" to such an extent that the emergency lights are obscured, and because of the "median plain of sound", direction cannot be determined.

To add further to motorist confusion, various municipalities have different markings, colors, sirens, and even lights on their emergency vehicles. Therefore, in order to reduce motorist confusion and enhance the potential for recognition of the emergency vehicle, it is recommended that when approaching a driver who is not responding to the emergency warning devices, the operator should:

--Fluctuate the sound wave; change the siren selection.

--Sound the horn to assist the driver in determining direction of approach.

--Flash headlights to add visual input for direction location.

--Remain patient and courteous.

In summary, the emergency vehicle operator should, at all times, realize that the motorist may not be intentionally refraining from moving to the right as the law requires, but in fact, may just not be aware that the emergency vehicle is present.

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(c) Behavior of the Driving Public

Many emergency vehicle crashes result from error on the part of either the emergency vehicle operator or the motoring public. This section of the manual will identify and delineate proper legal procedures which apply to the public in an encounter with an emergency vehicle, some of the common inappropriate reactions which can be expected to occur, and countermeasures which can be used to cope safely with improper public response to the emergency vehicle.

- Appropriate procedures

Upon the approach of an emergency vehicle, the Code of Virginia (Section 46.1-225) requires that ". . . the driver of every other vehicle shall immediately drive the same to a position as near as possible and parallel to the right-hand edge or curb, clear of any intersection of highways, and shall stop and remain in such position unless otherwise directed by a police or traffic officer until such vehicle shall have passed."

Also, the Code stipulates that "no vehicle shall be stopped at or in the vicinity of a fire, vehicle, or airplane accident or other area of emergency, in such a manner as to create a traffic hazard or interfere with the necessary procedures of police, firemen, rescue workers, or others whose duty is to deal with such emergencies." (Section 46.1-248).

- Deviant reactions

As discussed in detail previously, the emergency vehicle operator should always be alert to motorists who panic, ignore, or become confused upon the approach of an emergency vehicle. Deviant reactions can be expected to include failure to yield right-of-way, pulling to the left, stopping in the roadway, blocking an intersection, erratically changing lanes, or following or impeding emergency equipment. Correct techniques for dealing with such deviant reactions must be developed prior to operating an emergency vehicle.

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(5) Responsibilities on the Road under Emergency Conditions

The overall responsibilities required of any emergency vehicle operator include both legal and moral aspects.

- Legal responsibilities

Emergency vehicles have the right-of-way, but the operator is not exempt from criminal and civil charges for reckless disregard for the safety of persons and property. Emergency vehicles are not subject to speed limitations; however, the vehicle operator is not exempt from criminal charges for reckless disregard for the safety of persons and property. While emergency vehicle operators may violate certain rules of the road without being subject to criminal prosecution, they are not relieved from possible civil liability nor from criminal charges for reckless disregard for the safety of persons and property. (See the legal aspects detailed in Chapters Three, Four, and Five of this document for applicable sections of the Code of Virginia).

- Moral responsibilities and ethics

In view of the legal flexibilities extended to emergency vehicle operators, such drivers have a moral responsibility to safeguard and avoid exploiting these special considerations afforded to them. Moreover, the value of the service being performed by an emergency vehicle driver must be considered in light of the risk to both the driver and the public.

(6) Vehicle Check

In addition to the personal characteristics of the driver and the responsibilities involved in emergency vehicle operation, the operator's inspection of the vehicle is a critical component of safe driving. Therefore, the driver should be positive that the vehicle is in optimum operating condition. In order to do this, the driver should be familiar with and have confidence in the vehicle and should conduct a check of the

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following vehicle components:[4]

--Tires (Tread depth, inflation pressure, rim damage, and cracks/cuts).

--Wheel lug nuts; proper torque.

--Suspension.

--Engine compartment and latches (Oil level, brake fluid level/hydraulics; battery water level; accessory belts; power steering fluid levels; engine mounts; and belts and power drives).

--Driver and passenger compartments (Brake operation, lights, mirrors, locks, steering system, restraint system, communications system, and securing of all loose objects).

--Special equipment (Securing all objects in trunk, such as tire and jack, as well as all special equipment).

--Emergency equipment (Lights, siren, communications, and first aid kit).

Ideally, these checks should be made prior to each operation of the emergency vehicle, or in a daily routine in order to insure proper operating conditions in advance. The checks identified herein should be made in addition to the regular owner's manual maintenance, due to the excessive stress and wear to which an emergency vehicle is subjected. Vehicle condition and maintenance are two of the key factors influencing the final outcome of an operator's attempt to handle an emergency situation.

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[4] Advanced Driver Education Course Training Manual. (Milford, Michigan: General Motors Proving Grounds, 1971).

NOTES/REFERENCES

(7) Pre-ignition Procedures

As described previously, many aspects of human behavior are conditioned and are executed without active thought. Ideally, the vehicle operator should be so aware of proper pre-driving procedures that all steps are automatically completed. But regardless of how these procedures are executed, they should be adhered to as a matter of correct operating policy.

Therefore, prior to each operation of the emergency vehicle, the driver should:[5]

--Be confident that the vehicle is in optimum condition.

--Secure all appropriate equipment, information, clothing, etc.

--Place the key in the ignition.

--Adjust seat/head restraint if available. (Seat adjustment is an important element in the ability to control a vehicle. The driver must be comfortable in order to avoid fatigue and allow maximum freedom to maneuver the vehicle with ease. The sedan seat should be positioned as far back as the driver's legs will allow while still enabling operation of the foot controls. The test for proper position is to adjust the seat so that when the arm is fully extended, the wrist will touch the top of the steering wheel. Knees should be slightly flexed and hands should be able to be positioned at nine and three o'clock on the wheel, without feeling cramped. It is important to be able to steer quickly with arms extended and with elbows moving away from the body).

--Lock all doors.

--Adjust mirrors and equipment. (Mirrors offer the only contact with the traffic situation behind the vehicle. Sitting back in the seat, the inside mirror should be adjusted so that it highlights the right rear of the vehicle and visibility extends several

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[5] Ibid.

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hundred feet behind. Outside mirrors should be set so that visibility extends several hundred feet to the rear, using the side of the vehicle as a reference point).

--Fasten seat belts.

--Check instrument panel. (The driver should have a mental picture of where every control is located on the dash, so that any control, such as wipers, siren, or radio, can be reached while eyes remain on the road).

--Turn on ignition.

--Position hands. (As will be demonstrated in the skill development exercises, both hands are necessary for control. Hands should be placed as near to the nine and three o'clock position on the steering wheel as possible. This balanced hand position will facilitate a 180° turn of the steering wheel in the shortest possible time. Should it become necessary to turn more, the hand-over-hand method of steering should be used. The wheel should never be allowed to slip through the driver's hands, and at least one hand should firmly grasp the wheel at all times. In addition to restricting initial steering ability, an unbalanced hand position such as ten and two o'clock may cause the driver to pull the steering wheel to one side as the motion of the car tends to push the operator's body in one direction or another.

(8) Defensive Driving

Emergency vehicle operation is an inherently aggressive form of driving, but the safe and efficient completion of this driving task requires adherence to the basic principles of defensive driving. Defensive driving involves what is perhaps the most important principle to collision-free operation of a motor vehicle. Its basic techniques and concepts emphasize awareness, control, and the use of evasive action to protect oneself, passengers, and others, regardless of fault or legal obligations.

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In order to comprehend defensive driving techniques, a review of the various types of collisions is necessary. Basically, collisions can be classified as preventable or non-preventable. A preventable collision is one which could have been avoided had proper evasive action, defensive driving, or caution been exercised by the operator. A non-preventable collision would have occurred regardless of any action on the part of the driver.

The following types of collisions can be either preventable or non-preventable, depending upon the circumstances under which they occur:

--Vehicle behind
The vehicle in which you are traveling is struck from the rear. The defense against this type of collision is to come to a smooth, gradual stop, signalling intentions of stopping, slowing down, or turning. In a tailgating situation, the vehicle should be slowed down and the driver behind encouraged to pass.

--Vehicle ahead
The vehicle in which you are traveling strikes a vehicle in the rear. Driver alertness is an effective defense against such a collision. The driver should expect the car ahead to stop at any time without warning and should be observant of any situations which will cause the car ahead to slow down or stop. A rule-of-thumb to follow is to stay back one car length for each ten miles of speed. Speed should be considered in relation to the time, space, and reaction time necessary to stop.

--Oncoming vehicle
The vehicle in which you are traveling either strikes or is struck by a vehicle entering the intersection from a different leg of that intersection. Never assuming that the other driver will yield the right-of-way is an appropriate defense against such a collision. The driver should always look both ways at intersections to make sure other vehicles are yielding the right-of-way.

--Passing
The vehicle in which you are traveling while overtaking a second vehicle either strikes or is struck by a

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third vehicle. The defense is to be familiar with the speed and acceleration capabilities of one's vehicle. The speed of the vehicle to be passed and the speed and distance of the oncoming car should be estimated, and if there is any doubt whether the pass can be executed safely, it should not be attempted. Rear traffic should be checked to insure that the car behind is not also about to pass. Horn or lights should be used to inform the driver ahead, and after the passed car is clearly visible in the rear view mirror, the vehicle should be quickly moved back into normal position.

--Being passed
The vehicle in which you are traveling while being overtaken by a second vehicle either strikes or is struck by that vehicle or a third vehicle. Helping the other driver pass is defense against this collision. If the passing car needs more room, the driver being passed should slow down. Turn signals should be used, rear-view and side mirrors should be checked, and the driver should glance behind to be sure that the blind spot is clear before passing or changing lanes.

One type of defensive driving, the "Smith system", includes the following principles:

--Aim high in steering
This calls for repeated glances well ahead of the center of the intended driving lane. The driver's vehicle then follows the middle of the lane. The same rule applies in turning a corner. With oncoming cars, the driver checks lane position while the oncoming car is a long distance away.

--Get the big picture
This rule involves learning to see all of the roadway and seeing and considering the objects immediately ahead as only a part of the entire picture. Thus, the driver's eyes sweep the scene for a full city block or a half mile on rural roads. The sides and rear are constantly scanned.

--Keep eyes moving
This means shifting the eyes, avoiding eye-holding situations which can allow the vehicle to move blindly

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into an accident-producing situation. The driver who keeps a fixed stare tends to over-relax and invites sleep or highway hypnosis.

--Allow an "out"
Under this rule, the driver leaves a space cushion for maneuvering and allows extra space ahead. The lane is picked carefully and spacing is maneuvered by moving forward or dropping back. The driver thus allows an "out" in doubtful situations by reducing speed and touching brakes.

--Make sure the vehicle is visible
This involves signaling others of intentions early while there is still time and space in which to avoid other cars if they do not respond.

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(B) THE VEHICLE

STUDENT PERFORMANCE OBJECTIVES

Upon completion of this phase of classroom instruction, the student should be able to:

--Identify key mechanical/vehicle factors related to increased emergency vehicle crash risk (according to the type of vehicle under discussion--enforcement, fire, or medical).

--Define the following terms: friction, kinetic energy, inertia, velocity, centrifugal force, force of impact, and gravity.

--Describe the effects of natural laws on a motor vehicle.

--List and describe the purpose and importance of vehicle safety components.

ROLE OF THE VEHICLE IN THE TRANSPORTATION SYSTEM

While the capabilities of the driver are critical, it is a serious mistake to rely completely on even the most well-refined driving skills in vehicle operation under emergency conditions. In order to fully understand and cope with the situations encountered during emergency vehicle operation, it is imperative to also consider the function of the vehicle, since its condition and the laws of physics governing its movement play a significant role in determining its proper operation.

(1) Vehicle Maintenance and Inspection

A review of literature and research available within the past ten years on emergency vehicle involvement in crashes indicates that vehicle condition, specifically mechanical failure, plays an overly significant role in emergency vehicle crashes.

For instance, a New York study found that in terms of accident involvement, emergency vehicle defects were quite disproportionate to vehicle defects occurring

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in ordinary vehicles, ranging from 50% to 500% greater incidence.[6] As in Virginia, New York does not require an annual state inspection of emergency vehicles. Because of the lack of a mandatory emergency vehicle inspection law in this state, it is even more important that a periodic vehicle maintenance check be conducted by the agency which owns and operates such equipment. (See page 2-14 for a sample vehicle checklist).

(2) Basic Vehicle Dynamics

Each and every object on earth is subject to the laws of nature. Operating a motor vehicle under emergency conditions may push both the operator and the vehicle beyond the boundaries of the laws of physics upon which we usually rely.

The purpose of this section of the manual is to identify and develop the student's understanding of how and why natural laws affect the motor vehicle. With such preparation, the student should be better equipped to operate a motor vehicle with skill and confidence.

The following represent laws of nature most directly influencing operation of a motor vehicle, and each have specific implications in terms of the emergency driving task:[7]

- Friction

When two bodies are in contact, they resist motion, which would cause the surface of one to slide over the surface of the other.

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[6] Ken Carpenter and F.D. Newcomb, Emergency Vehicle Accident Involvement, 1969-70 (Albany, New York: Division of Research and Development, New York Department of Motor Vehicles, 1972).

[7] Many of the upcoming definitions are taken from the American Automobile Association's Teacher's Handbook for Sportsmanlike Driving. (New York: McGraw-Hill, 1962).

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The entire control of a moving vehicle depends on the grip of the tire surfaces on the road. This grip results from friction. Friction between the tire and the surface of the road enables a vehicle to start, turn, stop, or keep on moving. The amount of friction varies, therefore, with the condition of the tires and road surfaces. When friction is reduced, driver control is also reduced, and a collision is more likely to occur.

The friction conditions between two surfaces sliding across each other range under different circumstances. When the road surface is dry and the tires are in good condition, maximum friction and better vehicle control result. Conversely, when road surfaces are wet from such conditions as rain, snow, fog, dew, or water run-off, and tire condition is less than desirable, the friction is greatly reduced, thereby increasing the need for awareness on the part of the driver. Some environmental factors affecting friction are: composition of road surface material, smoothness of road surface, grades (uphill/downhill), weather and temperature, and design of roadway (proper banking and curve radii).

Drag factor (or coefficient of friction) is a number which scientifically describes the slipperiness of a road surface. (See the chart on page 2-23). For example, packed snow has a very low drag factor: .30 to .55. Thus, a vehicle traveling 25 miles per hour, once braking occurred, would travel (skid) from 54 to 70 feet on packed snow. On the other hand, new, sharp cement surface has a very high drag factor: .80 to 1.20, and the same vehicle at the same 25 miles per hour speed would travel (skid) on that surface only 18 to 26 feet. The better the road surface, as described by a higher drag factor, the greater the stopping resistance.

POSSIBLE RANGES OF PAVEMENT DRAG FACTORS FOR RUBBER TIRES

Description of Road Surface	Dry				Wet			
	Less Than 30 m.p.h.		More Than 30 m.p.h.		Less Than 30 m.p.h.		More Than 30 m.p.h.	
	From	To	From	To	From	To	From	To
Portland cement								
New, Sharp	.80	1.20	.70	1.00	.50	.80	.40	.75
Travelled	.60	.80	.60	.75	.45	.70	.45	.65
Traffic Polished	.55	.75	.50	.65	.45	.65	.45	.60
Asphalt or Tar								
New, Sharp	.80	1.20	.65	1.00	.50	.80	.45	.75
Travelled	.60	.80	.55	.70	.45	.70	.40	.65
Traffic Polished	.55	.75	.45	.65	.45	.65	.40	.60
Excess Tar	.50	.60	.35	.60	.30	.60	.25	.55
Brick								
New, Sharp	.75	.95	.60	.85	.50	.75	.45	.70
Traffic Polished	.60	.80	.55	.75	.40	.70	.40	.60
Stone Block								
New, Sharp	.75	1.00	.70	.90	.65	.90	.60	.85
Traffic Polished	.50	.70	.45	.65	.30	.50	.25	.50
Gravel								
Packed, Oiled	.55	.85	.50	.80	.40	.80	.40	.60
Loose	.40	.70	.40	.70	.45	.70	.45	.75
Cinders								
Packed	.50	.70	.50	.70	.65	.75	.65	.75
Rock								
Crushed	.55	.75	.55	.75	.55	.75	.55	.75
Ice								
Smooth	10	.25	.07	.20	.05	.10	.05	.10
Snow								
Packed	.30	.55	.35	.55	.30	.60	.30	.60
Loose	.10	.25	.10	.20	.30	.60	.30	.60
Metal Grid								
Open	.70	.90	.55	.75	.25	.45	.20	.35

The actual drag factor of a pavement of a given description may vary considerably because quite a variety of road surfaces may be described in the same way and because of some variations due to weight of vehicle, air pressure in tire, tread design, air temperature, speed, and some other factors. These figures represent experiments made by many different people in all parts of the U.S. They are for straight skids on clean surfaces. Speeds referred to are at the beginning of the skid.

SOURCE: Traffic Accident Investigator's Manual for Police (Evanston, Illinois: Northwestern University, 1963), p. 516.

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- Inertia

When no force is exerted on it, a body at rest remains at rest, while a body in motion continues in motion in a straight line at a constant speed.

- Velocity

Distance which an object travels at a certain speed; measured in miles per hour/feet per second.

--One mile = 5,280 feet

--One hour = 3,600 seconds

$$\frac{\text{(Number of miles per hour)} \times (5{,}280)}{3{,}600} = \text{Feet per second}$$

- Friction and inertia on curves

Centripetal force pushes a body into a curved path, out of its normal, inertia-dominated, straight-line movement.

Centrifugal force is a straight-line tendency of inertia--the tendency of an object pivoting in an arc to depart in a straight line, as in swinging a stone tied to a piece of string and releasing it.

Factors related to these forces include speed of travel, radius of curve, road and tire conditions, and grade and superelevation (banked, flat, crowned).

- Kinetic energy

This is the energy of motion and is related to the speed or velocity of an object. As the speed increases, so does the amount of kinetic energy generated. This energy must be dissipated before the object will come to a stop.

- Gravity

The pull of the earth which gives objects weight is what is meant by gravity.

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- Force of impact

This represents the force with which two objects collide. The severity of the exchange of kinetic energy when objects collide varies with speed, weight, and distance.

- Vehicle safety components

These include lap and shoulder belts, door locks and compartment latches, and helmets.

In order to summarize and better illustrate the previous material, the instructor should conduct exercises in which the students participate at this point. Vehicle dynamics, weight changes, etc. can be demonstrated with models and other teaching aids. Differences in limitations of various types of vehicles can also be discussed.

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(C) THE ENVIRONMENT

STUDENT PERFORMANCE OBJECTIVES

Upon completion of this unit of instruction, the student should be able to list and discuss:

- --Weather conditions which influence vehicle operation and their relative significance.
- --Roadway characteristics and their influence upon vehicle dynamics and operation.
- --Traffic situations which affect the operation of an emergency vehicle.

ROLE OF THE ENVIRONMENT IN THE TRANSPORTATION SYSTEM

The environment within which the driver and vehicle operate represents the third component of the motor vehicle transportation system. Environmental factors should, however, be considered with caution, without overstating their significance in terms of crash causation.

It is unfortunately often the case that the "cause" of a traffic crash is determined to have been some defective roadway design characteristic or changing, inclement weather conditions, when in fact, the fault actually should have been placed with the driver or the vehicle. This fallacy is promoted throughout the driving population, used as an "escape mechanism" to avoid personal responsibility and liability. While environmental factors do contribute to the complexity of operating a vehicle, they must be considered as predictable factors to be expected, even if they are not always known in advance.

(1) Weather Conditions

Weather is among the primary environmental determinants influencing the driving task and includes consideration of such factors as:

--Visibility
As discussed previously, approximately 90 to 95% of all driving cues or information is collected through

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the sense of vision. Weather conditions affecting visibility help determine the amount and quality of visual data available for processing, and thereby limit the input upon which operation of the vehicle is based. Specific problems can arise when adverse environmental conditions are present during emergency vehicle operation. Fog, rain, snow, and other inclement conditions, as well as merely reduced visibility during nighttime driving, are all conditions necessitating extra caution and special skills. Proper visibility must be maintained during problematic weather conditions, and the operator must take responsibility for insuring visibility of the emergency vehicle to others despite adverse weather conditions.

--Vehicle traction

In addition to the obviously hazardous situations resulting from ice, snow, and frost, a water or oil film on the road can cause equally dangerous conditions, possibly even hydroplaning. Moreover, abnormal winds can significantly alter vehicle dynamics.

--Temperature

Severe cold can generate problems in terms of vehicle steering and vehicle dynamics, such as increased resistance or other difficulties resulting from ice blocks on frame, suspension, etc.

(2) Roadway Characteristics

Familiarity with roadway design and drag factor is crucial for appropriate operation of a motor vehicle. All drivers should continuously be aware of the types or styles of roads on which they are traveling, specific roadway characteristics, and the relative stopping capabilities of their vehicles.

- Types of roadways

Limited access roads are those designed as part of the expressway system, allowing the movement of large volumes of traffic with minimum conflict. Access both on and off is restricted, and traffic is generally

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separated into at least four lanes of divided highway (e.g., interstate systems).

Free access roads are designed to provide ready access at any point along their perimeter.

A primary route is any route which serves through-traffic. It is designated by a number under the 600 level and excludes interstates.

Secondary routes are local collector roads or land service roads, designated by a number 600 and above.

- Design characteristics

A flat roadway is a relatively even surface which does not offer resistance to skidding on curves.

A crowned roadway is designed for efficient drainage, and the center of the road is elevated above the outer edges so that water will drain outward. This type of surface provides negative superelevation on curves.

A banked road surface is tilted on curves to direct physical forces against the roadway rather than force the vehicle sideways off the pavement.

- Road surfaces

Various types of road surfaces include: concrete, asphalt or tar, brick, stone block, gravel, cinders, rock, ice, snow, and metal grid. (See the chart on page 2-23 for drag factors associated with these surfaces).

- Problem areas

Hazardous characteristics of roadways include: wet roads (hydroplaning potential), sand or gravel on pavement, gravel roads, wet leaves on pavement, wet steel rails, wet or frosty planks, mud on pavement, brick or cobblestone pavement, rough road, potholes, dips, and humps.

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- Other physical characteristics

Radius of curves, making operational estimates, inclines and declines, and forces of nature must also be considered.

- Traffic patterns

Such factors as traffic volume, population density, pedestrian flow, use of the roadway by motorcyclists or bicyclists, and location of the road in terms of schools, hospitals, or other public facilities represent additional variables which must be taken into account.

(3) Special Considerations

All current research indicates that intersections represent the single greatest threat to safe emergency vehicle operation. An intersection is a point of conflict, where traffic and pedestrians are stopping, starting, turning, and as such, requires special consideration.

A New York state study reported that emergency vehicles are involved in intersection crashes 2.3 times as often as the remainder of the state's registered vehicle population per unit of exposure. Of the 219 crashes in New York state involving police, fire, or emergency medical equipment in 1970, 64% were known to have occurred at intersections.[8]

Investigations of intersection crashes involving emergency vehicles indicates that operators rely too much upon the flashing light and siren to clear the way. But other drivers are often not able to see or hear the warning devices until it is too late to yield the right-of-way, as was discussed previously.

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[8] Ken Carpenter and F.D. Newcomb, Emergency Vehicle Accident Involvement, 1969-70 (Albany, New York: Division of Research and Development, New York Department of Motor Vehicles, 1972).

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Since it is logical to conclude that the increased vehicular and human population encountered at intersections is what makes cross-streets so potentially hazardous for the emergency vehicle, special consideration should be given to the population density of the area in which the vehicle is being operated. If the area is rural, relatively free of vehicular and pedestrian traffic and not overly complicated with visual obstructions, a vehicle would be operated in a manner which differs significantly from operation in either a residential location where pedestrians and children at play can be expected or a congested metropolitan area with heavy pedestrian and vehicular traffic, as well as visual obstructions at every intersection.

- All situations should be examined upon their own merits and should not be treated alike, for driving which is appropriate for one locale may be extremely dangerous in another. Just as it is critical for the driver to adjust vehicle operation according to population density, it is imperative to recognize the restrictions imposed by changing or inclement weather conditions and alter vehicle operation accordingly. In addition, once aware of varying roadway design characteristics, the driver must be able to combine them with other variables affecting emergency vehicle operation and adjust driving behavior accordingly.

In summary, emergency vehicle operation is an extremely complicated task requiring exceptional reserves of judgment and skill. Many important factors dictate the manner in which the emergency vehicle should be operated, and these variables must continuously be taken into consideration and translated into driving appropriate for conditions.

CHAPTER THREE

PRACTICAL APPLICATIONS: LAW ENFORCEMENT AGENCIES

NOTES/REFERENCES

CHAPTER THREE

PRACTICAL APPLICATIONS: LAW ENFORCEMENT AGENCIES

INTRODUCTION

Chapter Two of this training manual has concentrated upon that background information which is necessary for all students to be familiar with before initiating operation of an emergency vehicle. Qualifications, skills, objectives, performance criteria, and other issues have been discussed in order to equip the student with the foundations upon which appropriate application of emergency vehicle driving skills are based.

With this understanding and appreciation of the complexities of emergency vehicle operation, the student should now be ready to assemble data and formulate concepts and techniques into actual operational procedures. Therefore, Chapter Three is designed to familiarize students with the legal aspects, policies, responsibilities, habits, and skills necessary for the proper operation of an emergency vehicle.

While the emergency operation of enforcement, fire, and ambulance vehicles involves many similarities, there are also distinct characteristics pertaining to each of these service areas alone. For this reason, each area--enforcement, fire, and emergency medical services--will be discussed separately to aid in the organized presentation of the material by the instructor.

STUDENT PERFORMANCE OBJECTIVES

Upon completion of this portion of the training, the law enforcement officer (student) should have developed those skills and attitudes that will enable the operation of a motor vehicle with safety, precision, and confidence.

THE ROLE OF EMERGENCY VEHICLE OPERATOR'S TRAINING IN LAW ENFORCEMENT

As a daily part of the law enforcement function, officers are required to operate vehicles in any number of ordinary and emergency circumstances. But often they are inadequately prepared to perform this driving function in a professional manner.

Studies indicate that the typical police officer spends 70%

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of on-duty time driving.[1] Not only must the enforcement officer be an "expert" driver while on patrol, he or she must also contend with emergency and pursuit situations, operate a vehicle during weather conditions in which the average motorist would be reluctant to drive, perhaps operate substandard equipment, and may have to compensate for fatigue and boredom.

According to the National Safety Council, about 26,000 emergency vehicles were involved in motor vehicle accidents in 1973, some 300 of which were fatalities.[2] Yet, drivers of these vehicles often receive little, if any, formalized training in the driving function.

Crash reduction through training is not only an effective safety measure, it is economical as well. In 1972, 2,260 collisions involving Chicago Police Department vehicles were reported. The average cost per collision was $342, and 4,752 man/days were lost, resulting in a total cost of $770,000.[3] A National Safety Council survey documents that officers with no driver training experienced 62% more accidents than expected, while those who had practiced track or skid pan training experienced 26% less accidents than expected.[4] After the U.S. Park Police in Washington, D.C., conducted a series of driver training schools for its officers, that agency's 1972 figure of 44.7 accidents per million miles driven decreased during the first quarter of 1974 to a rate of 8.17.[5] Obviously, training works!

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[1] Law Enforcement Training Course (Champaign, Illinois: Police Training Institute, University of Illinois) p. 1.

[2] Accident Facts (Chicago, Illinois: National Safety Council, 1974) p. 56.

[3] Law Enforcement Training Course, p. 1.

[4] Ibid.

[5] Parade, October 13, 1974, p. 9.

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(A) LEGAL ASPECTS

Before any skill techniques can appropriately be applied to the driving task, it is essential that the law enforcement officer be familiar with and thoroughly comprehend the legal responsibilities and regulations governing operation of an enforcement vehicle under emergency situations. In the state of Virginia, the following sections of the Motor Vehicle Code are applicable to emergency vehicle operation and should be completely understood by the officer before engaging in the emergency driving task.

46.1-168 CHAPTER APPLICABLE TO DRIVERS OF ALL VEHICLES REGARDLESS OF OWNERSHIP.--The provisions of this chapter applicable to the drivers of vehicles upon the highways shall apply to the drivers of all vehicles regardless of ownership subject to such specific exceptions as are set forth in this chapter. (Code 1950, Section 46-181; 1958, c. 541).

Cross reference.--As to consideration of defendant's prior traffic record before imposing sentence for certain traffic offenses, see Sections 19.2-186.1 and 19.2-186.2.

State statutes regulating the flow of traffic at intersections take precedence over local ordinances which prohibit drivers of vehicles from passing through or between processions, unless specific exception is made in the statutes. Paige v. Edgar, 210 Va. 54, 168 S.E.2d 103 (1969).

Police cars, ambulances, etc.--In Virginia the drivers of police cars, ambulances, and other State, county, and city-owned vehicles are subject to all traffic regulations unless a specific exception is made. Virginia Transit Co. v. Tidd, 194 Va. 418, 73 S.E.2d 405 (1952); Manhattan For Hire Car Corp. v. O'Connell, 194 Va. 398, 73 S.E.2d 410 (1952). For statute providing exceptions for certain emergency vehicles, see Section 46.1-226.

46.1-199 EXCEPTIONS TO SPEED LIMITATIONS; WHEN EXEMPTIONS APPLICABLE; PROSECUTION FOR RECKLESSNESS; CIVIL LIABILITY.--(a) The speed limitations set forth in this chapter shall not apply to vehicles when operated with due regard for safety under the direction of the police in the chase or apprehension of violators of the law, or of persons charged with or suspected of any such violations, or in testing

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the accuracy of speedometers on police vehicles, or in testing the accuracy of the radio microwave or other electrical devices specified in Section 46.1-198, nor to fire department vehicles when traveling in response to a fire alarm or pulmotor call, nor to ambulances when traveling in emergencies outside the corporate limits of cities and towns.

(b) These exemptions, hereinbefore granted to such a moving vehicle, shall apply only when the operator of such vehicle displays a flashing, blinking, or alternating red light and sounds a siren, bell, exhaust whistle, or air horn designed to give automatically intermittent signals, as may be reasonably necessary, and, only when there is in force and effect for such vehicle standard automobile liability insurance covering injury or death to any one person in the sum of at least one hundred thousand dollars in any one accident, and subject to the limit for one person, to a limit of three hundred thousand dollars because of bodily injury to or death of two or more persons in any one accident, and to a limit of ten thousand dollars because of injury to or destruction of property of others in any one accident. Such exemptions shall not, however, protect the operator of any such vehicle from criminal prosecution for conduct constituting reckless disregard for the safety of persons and property. Nothing in this section shall be construed to release the operator of any such vehicle from civil liability for failure to use reasonable care in such operation. (Code 1950, Section 46-216; 1950, p. 84; 1958, c. 541; 1964, c. 15; 1966, c. 699; 1974, c. 365).

Cross reference.--For further provisions as to exemptions, see Section 46.1-226.

The 1974 amendment substituted the language beginning "one hundred thousand dollars in any one accident" for "twenty-five thousand dollars" at the end of the first sentence of subsection (b).

Law Review.--For survey of Virginia law on torts for the year 1969-1970, see 56 Va. L. Rev. 1419 (1970).

The effect of this section, creating exemptions to speed limits, is that violation of the statute fixing speed limits, Section 46.1-193, is not negligence per se if the exemption is applicable. Yates v. Potts, 210 Va. 636, 172 S.E.2d 784 (1970).

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Speed limitations do not apply to police vehicles operated, with due regard for safety, in apprehension of violators. Yates v. Potts, 210 Va. 636, 172 S.E.2d 784 (1970).

The requirement that a siren be sounded "as may be reasonably necessary" should be interpreted with due regard for safety of police officer conducting a chase. Yates v. Potts, 210 Va. 636, 172 S.E.2d 784 (1970).

Applied in Virginia Transit Co. v. Tidd, 194 Va. 418, 73 S.E.2d 405 (1952); Whittaker v. Van Fossan, 297 F.2d 245 (4th Cir. 1961).

46.1-225 APPROACH OF POLICE OR FIRE-FIGHTING VEHICLES, RESCUE VEHICLES OR AMBULANCES; VIOLATION AS FAILURE TO YIELD RIGHT-OF-WAY.--(a) Upon the approach of any vehicle listed in paragraph (a) of Section 46.1-226 giving audible signal by sirens, exhaust whistle, or air horn designed to give automatically intermittent signals, the driver of every other vehicle shall immediately drive the same to a position as near as possible and parallel to the right-hand edge or curb, clear of any intersection of highways, and shall stop and remain in such position unless otherwise directed by a police or traffic officer until such vehicle shall have passed. This provision shall not operate to relieve the driver of any such vehicle from the duty to drive with due regard for the safety of all persons using the highway, nor shall it protect the driver of any such vehicle from the consequences of an arbitrary exercise of such right-of-way.

(b) Violation of this section shall constitute failure to yield the right-of-way. (Code 1950, Section 46-241; 1958, c. 541; 1960, c. 570; 1966, cc. 613, 699; 1968, c. 89).

Purpose of section.--It was to give some leniency to police, fire, and ambulance vehicles that this section and Section 46.1-226 were enacted. Phillips v. United States, 182 F. Supp. 312 (E.D. Va. 1960).

This section apparently grants a right-of-way to an ambulance operating under an emergency run. Phillips v. United States, 182 F. Supp. 312 (E.D. Va. 1960).

46.1-226 POLICE, FIRE-FIGHTING AND RESCUE VEHICLES AND AMBULANCES EXEMPT FROM REGULATIONS IN CERTAIN EMERGENCIES; EXCEPTIONS AND ADDITIONAL REQUIREMENTS.--(a) The operator

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of (1) any police vehicle operated by or under the direction of a police officer in the chase or apprehension of violators of the law or persons charged with or suspected of any such violation, (2) any vehicle used for the purpose of fighting fire, including publicly owned State forest warden vehicles not to exceed two hundred in number, when traveling in response to a fire alarm or emergency call, (3) any vehicle owned by a political subdivision of the Commonwealth for rescue purposes when traveling in response to a fire alarm or an emergency call, or (4) any ambulance or rescue or lifesaving vehicle designed or utilized for the principal purposes of supplying resuscitation or emergency relief where human life is endangered, whether such vehicle is publicly owned or operated by a nonprofit corporation or association, when such vehicle is being used in the performance of public services, and when such vehicle is operated under emergency conditions, may, without subjecting himself to criminal prosecution:

(1) Proceed past red signal, light, stop sign or device indicating moving traffic shall stop if the speed and movement of the vehicle is reduced and controlled so that it can pass a signal, light or device with due regard to the safety of persons and property.

(2) Park or stand notwithstanding the provisions of this chapter.

(3) Disregard regulations governing a direction of movement of vehicles turning in specified directions so long as the operator does not endanger life or property.

(4) Pass or overtake, with due regard to the safety of persons and property, another vehicle at any intersection.

(b) These exemptions, hereinbefore granted to such a moving vehicle, shall apply only when the operator of such vehicle displays a flashing, blinking or alternating red light and sounds a siren, exhaust whistle, or air horn designed to give automatically intermittent signals, as may be reasonably necessary, and, only when there is in force and effect for such vehicle standard automobile liability insurance covering injury or death to any person in the sum of at least one hundred thousand dollars because of bodily injury to or death of one person in any one accident and, subject to the limit for one person, to a limit of three hundred thousand dollars because of bodily injury to or death of two or more

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persons in any one accident, and to a limit of ten thousand dollars because of injury to or destruction of property of others in any one accident. Such exemptions shall not, however, protect the operator of any such vehicle from criminal prosecution for conduct constituting reckless disregard of the safety of persons and property. Nothing in this section shall be construed to release the operator of any such vehicle from civil liability for failure to use reasonable care in such operation. (Code 1950 (Suppl.) Section 46-241.1; 1954, c. 356; 1956, c. 192; 1958, c. 541; 1966, cc. 350, 699; 1968, c. 89; 1974, c. 365).

The 1974 amendment substituted "one hundred thousand dollars" for "fifty thousand dollars" and "ten thousand dollars" for "five thousand dollars" in the first sentence of subsection (b).

Law Review.--For survey of Virginia law on torts for the year 1971-1972, see 58 Va. L. Rev. 1349 (1972).

Purpose of section.--It was to give some leniency to police, fire and ambulance vehicles that this section and Section 46.1-225 were enacted. Phillips v. United States, 182 F. Supp. 312 (E.D. Va. 1960).

The legislature requires the driver of an authorized emergency vehicle to drive with due regard for the safety of all persons, and the same standard of care must apply regardless of whether the operator sues or is being sued. Smith v. Lamar, 212 Va. 820, 188 S.E.2d 72 (1972).

The proper standard of care required of the driver of an emergency police vehicle is the standard of care of a prudent man in the discharge of official duties of a like nature under like circumstances. Smith v. Lamar, 212 Va. 820, 188 S.E.2d 72 (1972).

The standard of care which would customarily be required of the ordinary motorist does not apply to a police officer operating his vehicle under certain conditions prescribed by law, in hot pursuit of a law violator. Smith v. Lamar, 212 Va. 820, 188 S.E.2d 72 (1972).

As to obedience to traffic lights by drivers of emergency vehicles under former law, see Virginia Transit Co. v. Tidd, 194 Va. 418, 73 S.E.2d 405 (1952); Manhattan For Hire Car Corp. v. O'Connell, 194 Va. 398, 73 S.E.2d 410 (1952).

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46.1-250.1 STOPPING VEHICLE OF ANOTHER; BLOCKING ACCESS TO PREMISES; DAMAGING OR THREATENING COMMERCIAL VEHICLE OR OPERATOR THEREOF.--(a) It shall be unlawful for any person: (1) to intentionally and willfully stop the vehicle of another for the sole purpose of impeding its progress on the highways, except in the case of an emergency or mechanical breakdown; (2) to intentionally and willfully block the access to and from any premises of any service facility operated for the purposes of selling fuel for motor vehicles; of performing repair services on motor vehicles; or of furnishing food, rest or any other convenience for the use of persons operating motor vehicles engaged in intrastate and interstate commerce upon the highways of this State; (3) to intentionally and willfully damage any vehicle engaged in commerce upon the highways of this State, or threaten, assault or otherwise harm the person of any operator of such motor vehicle engaged in the operation of such motor vehicle being used for the transportation of property for hire upon the highways of this State.

(b) Any person violating the provisions of this section shall be guilty of a misdemeanor, and in addition, his operator's or chauffeur's license may be revoked by the court for a period not in excess of one year. The court shall forward such license to the Division of Motor Vehicles as provided by law.

(c) The provisions of this section shall not apply to any law-enforcement officer, school guard, fireman or member of a rescue squad, when they are engaged in the performance of their duties or to any vehicle owned or controlled by the Virginia Department of Highways while engaged in the construction, reconstruction or maintenance of highways. (1974, c.457).

46.1-267 OTHER PERMISSIBLE LIGHTS; POLICE AND FIRE-FIGHTING VEHICLES, EMERGENCY VEHICLES, ETC.--Any motor vehicle may be equipped with not to exceed two fog lamps, one passing lamp, one driving lamp, two side lamps of not more than six candlepower; interior light of not more than fifteen candlepower; vacant or destination signs on vehicles operated as public carriers, and signal lamps.

Only those vehicles listed in paragraph (a) of Section 46.1-226 and paragraph (a) of Section 46.1-267 and school buses may be equipped with flashing, blinking or alternating red

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emergency lights of a type approved by the Superintendent.

Vehicles used for the principal purpose of towing or servicing disabled vehicles or in constructing, maintaining and repairing highways or utilities on or along public highways, vehicles used for the principal purpose of removing hazardous or polluting substances from State waters and drainage areas on or along public highways for use only when performing such duties and hi-rail vehicles may be equipped with flashing, blinking or alternating amber warning lights of a type approved by the Superintendent, but such lights on hi-rail vehicles shall be activated only when such vehicles are operated on railroad rails.

(a) A member of any fire department, volunteer fire company or volunteer rescue squad may equip one vehicle owned by him with a flashing or steady-burning red light of a type approved by the Superintendent, for use by him only in answering emergency calls.

Any person violating the provision of this section shall be guilty of a misdemeanor.

(b) Blue lights, steady or flashing, of a type approved by the Superintendent shall be reserved for civil defense vehicles, publicly or privately owned.

No motor vehicle shall be operated on any highway which is equipped with any lighting device other than lamps required or permitted in this article or required or approved by the Superintendent or required by the federal Department of Transportation. (Code 1950, Section 46-273; 1954, c. 310; 1958, c. 541; 1960, cc. 156, 391; 1962, c. 512; 1966, cc. 655, 664; 1968, c. 89; 1972, c. 7; 1974, c. 537).

46.1-285 SIRENS OR EXHAUST WHISTLES UPON EMERGENCY VEHICLES.--Every police vehicle and vehicle used for the purpose of fighting fire and every ambulance or rescue vehicle used for emergency calls shall be equipped with a siren, exhaust whistle or air horn designed to give automatically intermittent signals of a type not prohibited by the Superintendent. Publicly owned vehicles used by a State forest warden, not to exceed two hundred in number in the Commonwealth, may also be so equipped. (Code 1950, Section 46-291; 1958, c. 541; 1960, c. 391; 1966, cc. 655, 664, 699; 1968, c. 89).

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19.2-94 FLIGHT; PURSUIT; ARREST ANYWHERE IN THE STATE.

If a person charged with an offense shall, after or at the time the warrant is issued for his arrest, escape from or out of the county or corporation in which the offense is alleged to have been committed, the officer to whom the warrant is directed may pursue and arrest him anywhere in the State; or any person authorized to issue process under Section 19.2-90, of a county or corporation other than that in which the warrant was issued, on being satisfied of the genuineness thereof, may endorse thereon his name and official character, and such endorsement shall operate as a direction of the warrant to an officer of such endorser's county or corporation.

The authority of any officer of any county, city or town authorized by law to make arrests shall extend throughout the adjoining county, city or town in which it may be necessary to go, without a warrant, when actually in close pursuit of a person who has committed a misdemeanor in the presence and in the jurisdiction of such officer, and such authority shall extend throughout the State when in close pursuit of a person sought to be arrested on the ground that such person has committed a felony in this State, even though no warrant has been issued. (Code 1950, S. 19-73; 1950, p. 612; 1960, c. 366).

Cross References. As to special officers, see Section 15-570. As to warrants for escaped patients of State hospital, see Sections 37-97, 37-97.1.

Officer may summon residents of another county to his assistance. In view of the provision of this section authorizing the officer to whom a warrant is directed to pursue and arrest an alleged criminal anywhere in the State, an officer, in case of resistance to arrest or a search warrant, may summon residents of another county to assist him, notwithstanding the provision of Section 15-515 authorizing such officer to summon to his assistance people "of his county or corporation." Dellastatious v. Boyce, 152 Va. 368, 147 S.E. 267.

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(B) NATURE OF THE CALL

During the course of any normal work day, the law enforcement officer may encounter a number of situations in which prompt action is required. The course of action chosen may result from past experiences with similar incidents, and should always be guided by departmental policy. Especially in those cases where policy is vague or where the officer has not had previous experience under similar circumstances, it is extremely helpful to have some guideline to follow.

Any attempt to encompass all aspects of possible "emergency situations" would be futile. Therefore, this section of the manual will be limited to general guidelines which can assist in the officer's determination of and safe arrival at a "true" emergency scene.

Just as enforcement personnel have discretionary power in determining whether or not a law has been violated, they likewise must decide whether a situation to which they are ordered to respond is an actual emergency.

An emergency can be defined as: "a situation in which there is a high probability of death or personal injury to an individual, and action by an enforcement officer may avert or reduce the seriousness (of the occasion). A bona fide emergency is an occurrence which calls for immediate action."[6]

Most calls that an officer receives come via radio. But often the caller will fail to give the dispatcher vital information, or the dispatcher will fail to transfer all of the facts to the patrol officer. This is the type of circumstance which must be carefully weighed by the officer. Over-reaction in this situation--"pulling all stops" and thus disregarding due caution--is just as serious as failing to respond to the call.

If inadequate information is received, the "right" response may not be apparent until after arrival at the scene. Subsequently, when the officer discusses the event with a supervisor, the opportunity is presented for formulating departmental policy to govern such an occurrence in the future.

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[6] Edward E. Daugherty, Safety in Police Pursuit Driving (Springfield, Illinois: Charles C. Thomas, 1961), p. 16.

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(C) DEPARTMENTAL POLICY

Written policies of the enforcement agency should establish conditions under which the following types of driving are to be handled: emergency, pursuit, and high-speed.[7]

Emergency driving relates to the effort made to proceed to an emergency scene at a speed greater than normally driven by an officer.

Pursuit driving is the chase of a suspect in a moving vehicle with intent to apprehend.

High-speed driving involves movement at a speed in excess of maximum speed laws.

Departmental policy should also cover the use of emergency lights, sirens, head-lamps, and/or other visual attractions to be used when traveling under emergency conditions. If more than one vehicle is dispatched, policy should cover which unit is to use which siren. (For example, policy could specify that the first unit assigned to an emergency call would use the "hi/lo" siren, with the second unit assigned as a back-up to use the "wail" siren, and the third back-up unit to use the "yelp" siren).

Policy could further require that vehicles travel to the emergency scene with a window at least half open, in order to hear other sirens and avoid crash contact between responding units. Inside an enforcement vehicle under emergency circumstances, there is normally a high level of noise. With the use of various sirens and an open window, the driver can more easily identify the approach of another emergency vehicle, and the possibility of both being on the same high pitch at the same time is greatly reduced.

As emergency units travel to the incident, the chances of their being involved in a crash greatly increase, particularly at intersections. It is recommended that the safest way to proceed through an intersection in which the emergency vehicle must violate the red light or stop sign is to stop, obeying the traffic control device, and then proceed with

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[7] Much of the material on emergency, pursuit, and high-speed driving has been condensed from Pursuit in Traffic Law Enforcement (Evanston, Illinois: Northwestern University, 1967), p. 1.

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extreme caution.

In a pursuit situation, only the one unit following the suspect vehicle should be using emergency equipment. The pursuing vehicle's primary responsibility is to furnish constant position reports, and other enforcement units in the area should be alert for the stopping of the vehicle. If it is necessary for two or more vehicles to travel, one behind the other, during a pursuit, there should be sufficient distance between the units for the public to realize that more than one vehicle is approaching.

To some officers, abandoning a pursuit is unthinkable and often mistakenly considered a personal defeat, or even criticized by peers as "poor driving." But in actuality, the person who decides to abandon a pursuit is more likely displaying good discipline and training, by realizing that under the circumstances, abandoning the pursuit is the most intelligent choice.

Departmental policies regarding pursuit may recommend abandoning the chase when:[8]

--the hazards of exposing the officer and the public to unnecessary risks are high. For instance, if the continued pursuit of the violator will potentially create more hazardous conditions than the original violation would justify.

--the environmental conditions indicate the futility of continued pursuit. For instance, if hazardous weather, poor visibility, and/or physical distance from the violator constitute an impractical challenge.

--the offense is not serious enough to warrant the safety risk involved. For instance, pursuing a known or suspected felon, as compared to a minor traffic violator.

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[8] The abandoning pursuit suggestions are contained in Training Key #92 (Gaithersburg, Maryland: International Association of Chiefs of Police), p. 1.

Departmental policy should also cover the speed at which to travel, noting that unreasonable speed will not be permitted under any circumstances. Such a policy should explicitly state how many miles in excess of the speed limit the agency considers as the maximum authorized speed, and under what, if any, circumstances exceptions can be made.

Various agencies which the student body represents may have additional policies governing emergency and pursuit situations, and if so, they should be covered here. Of course, if too many policy statements are issued, officers may become confused and the potential for ambiguity is increased; on the other hand, too few policies may result in vagueness, indecisiveness, and frustration. The main feature to keep in mind is that policies are merely guidelines, designed to structure, not replace, officers' discretion; and as such, policy determinations can never hope to cover every conceivable application. If no policy regarding the operation of emergency vehicles is currently in use, it is recommended that those presented herein be seriously considered for adoption by the agencies represented in the student body.

(D) RESPONSIBILITIES TO THE PUBLIC

Law enforcement officers have an obligation to respond to "true" emergencies as quickly and safely as possible. But there is also a responsibility to respect the motoring public through which the emergency vehicle must be maneuvered. If a greater hazard is created by the response of the vehicle as a result of inadequate judgments and/or improper driving than the emergency to which the driver is responding presents, the responsibility to respect the other motorists on the road has not been met.

Abuse of the privilege to violate traffic laws in emergency situations is extremely serious. It is the duty of the law enforcement administrator to ensure that departmental policy is written which clearly describes what constitutes a "true" emergency and the proper method to use in responding to such a situation.

Legal regulations which provide special privileges to emergency vehicles must be used with discretion and caution.

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Taking undue advantage of these privileges through overuse may demand a thorough study of the usefulness of special laws for emergency vehicles, in light of the potential hazards created by such immunities.

(E) SKILL DEVELOPMENT--VEHICLE OPERATION

This section of the manual is designed to be used on the driving range, with instructors first demonstrating proper execution of the maneuvers, and then testing the students' ability to perform them. The most important item to keep in mind throughout the on-range portion of the training is safety. This cannot be stressed too much or repeated too often.

Learning the skill of driving a car is very similar to learning the skill of riding a bicycle. The first time a person sits on a bike seat, he does not immediately begin to ride. It takes time to develop balance, to learn capabilities and limitations of the bike, and become confident. If one wants to advance from recreational bike-riding to professional cycling and racing, new, more sophisticated skills must be learned and practiced. So it is with driving a car. Most students can drive a motor vehicle, but now they must learn new skills and develop new attitudes to assist them in becoming more proficient in the driving task as it applies to emergency vehicle operation.

There is a distinct difference between reaction under normal driving conditions and reaction with a siren operating overhead, emergency lights flashing, and two-way radio conversation on-going. With high levels of adrenalin being pumped throughout the driver's system, it is easy to get caught-up in the excitement of the chase or the emergency run.

The student must learn to operate an emergency vehicle safely under the full impact of these tense conditions, maintaining personal control over emergency conditions in all situations and at all times. The experiences provided during the on-range portion of the training will assist the officer in accomplishing this difficult task.

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(1) Student Assignments and Criteria for Evaluation

The most effective instructor/student ratio for this type of course is one instructor for every three students. This allows the instructors to become familiar with each student's driving capabilities and personal driving problems. As the instructor is assisting the one student behind the wheel, the other two are in the vehicle observing. Riding as an observer is important in order to enable the student to become familiar with the course and also to assist the driver if required. Having four individuals in a vehicle is comfortable and assists greatly in weight distribution.

Ideally, the physical layout of the course should enable at least three groups to use a particular area of the range without interfering with each other, but existing conditions may alter this. Facilities must be adequate enough to properly conduct the exercise, and too many maneuvers should not be conducted on a facility with insufficient space.

A sample evaluation form is included in the Appendix of this manual. It should be explained to students prior to beginning the behind-the-wheel phase of the program (preferably during the review of skill exercises to be discussed). The evaluation form will be essential to determining the progress of each student and will also be helpful in pointing out areas where each is weak.

(2) Review of Pre-driving Habits

If safe driving is to be accomplished under normal situations, and especially under emergency conditions, the driver must be comfortably and securely seated and must be familiar with the vehicle's interior and instrument locations.

The seat should be positioned as far back as leg length will allow while still being able to operate the foot controls. There will be no left foot braking; therefore, the left foot should be securely stationed on the floor board for stabilization of the body. In this position, the thighs should be resting on the seat, and the knees should be slightly flexed. The seat should be adjusted

NOTES/REFERENCES

until this position is achieved, making sure that the seat is locked into position. The seat position can be checked by placing the hands at the nine and three o'clock position on the steering wheel--this seat position must not be cramped. Position is important for being able to steer quickly, arms extended, moving the elbows away from the body. This balanced hand position will enable the driver to make turns of the steering wheel in the shortest possible time.[9]

When approaching a curve, rather than changing hand position in the curve, hands should be placed on the steering wheel prior to beginning turning movement. Without having arms overlapped or crossed, the driver is better able to control the vehicle in the curve. Should additional turning be necessary, one hand can merely be released and the wheel re-grasped at the position which will give the required amount of turning degrees.

The driver of any emergency vehicle should be so familiar with the interior switches and instrument panel that only one quick glance at the desired switch or dial can provide the necessary visual input to maneuver a switch or receive the required data from a gague. Emergency driving situations are neither the time nor the place to be learning the vehicle's interior instrument panel. This knowledge must be committed to memory prior to any actual driving.

During the upcoming on-range exercises, the following safety measures must be adhered to:

- At any time that the vehicle is stopped on the driving range, emergency flashers will be operating.
- In all situations in which the driver is out of the vehicle, the emergency brake will be applied.
- At any time that the driver is out of the vehicle, the driver's door will be closed.

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[9] Evasive and Emergency Curriculum for Driver Education (Carbondale, Illinois: Safety Center, Southern Illinois University, 1974), p. 11.

NOTES/REFERENCES

- Any backing maneuver will be preceded by the sound of the horn.
- Any use of the radio will require strict radio procedures, and at the completion of any and all transmissions, the hand microphone will be secured in its proper position.
- The use of seat belts will be required at all times when the vehicle is in operation. During Phase II (Specialized Maneuvers), Phase III (Emergency Vehicle Operation), and Phase IV (Violator Pursuit), shoulder harnesses will be worn in addition to the seat belt and crash helmet.

(3) Instructor Demonstrations

Many law enforcement officers are concerned about being involved in a roll-over accident. In order to reduce this concern, two driving demonstrations will be conducted following an explanation of the causes of roll-over accidents.

American-made vehicles, particularly those used in enforcement work, are designed to virtually eliminate the possibility of a roll-over on a hard, level surface. This means that if a vehicle begins to slide sideways, it will not roll over, unless:

--There is a great change in the drag factor (coefficient of friction). For example: A vehicle sliding may leave the hard surface of the roadway and enter a dirt or gravel portion of a shoulder or median. If the wheels are not free to slide and a build-up of materials begins to accumulate in front of the tire as it slides sideways, the weight portion below the center of gravity of the vehicle will decelerate faster than the portion above the center of gravity, and if the speed is great enough, the vehicle may roll over.

--The deflation of a tire causes the wheel rim to gouge into the hard road surface. This will again decelerate the lower portion of the vehicle faster than the upper portion, and if the speed is great enough, the vehicle will roll.

NOTES/REFERENCES

An American vehicle will not roll when tires remain inflated and the drag factor remains approximately the same. To demonstrate this point, an instructor will remain with the class and discuss this fact, while another instructor will proceed at a speed of approximately 30 mph in front of the group and put the vehicle into a control slide skid.

To further demonstrate this point, each student will meet with an assigned instructor and vehicle. The instructor will emphasize the stability of the vehicle and the causes of roll-over accidents. After each student has securely fastened seat and shoulder belts, the instructor will proceed to demonstrate the car's stability by placing it into a controlled slide skid.

(4) Behind-the-wheel Exercises and Observation

STRESS SAFETY!

Realizing that physical facilities will vary, it is highly recommended that the physical layout of the course be designed to enable at least three groups to be performing different driving exercises simultaneously, with groups rotating from one exercise to the next simply and systematically. If an exericse cannot be conducted properly with minimal risk, it should be discontinued.

Prior to the students performing driving exercises, each instructor will conduct assigned students through each exercise, explaining vehicle position and correct procedures for execution of the exercise. Demonstrations should be models of expert performance, carried out at slow speeds, and accompanied by comments pointing out the critical elements of performance. Demonstrations of complex maneuvers and techniques should be simplified, emphasizing only the most critical aspects of performance.

In consideration of the limited amount of time for in-car instruction, it is suggested that the instructors organize and conduct range instruction so that maximum time is provided for student practice. Also, valuable range time should not be consumed by covering material that can be dealt with effectively in the classroom, as homework, or during observation time.

NOTES/REFERENCES

In addition, the following instruction guides should be kept in mind, in view of the problem of teaching in an inherently dangerous environment:

- Never expose students to unreasonable risk of harm.
- Be alert to the emotional strain that can affect the performance of both students and instructors.
- Make an effort to identify students who approach the driving task with considerable fear and anxiety, treating them accordingly.
- Keep records of the driving performance of each student during each practice period.
- Conduct occasional individual student/instructor conferences to discuss the student's performance and plan for improvement.
- Use independent study assignments.
- Select teaching methods that are most appropriate for the specific content being discussed.
- Be prepared to adjust the amount of practice time spent on each skill to suit the individual learning capacities of each student.
- Provide the student with sufficient practice on each skill to enable correct performance on several successive trials.
- Periodically check to determine whether skills learned earlier have been retained, and when necessary, provide additional practice.
- Require the student to practice fundamental skills until they are mastered well enough to permit efficient progress to more advanced skills.
- Avoid continuous and repetitive practice of the same skill in order to avoid the loss of student motivation.
- In planning for the practice of most driving skills, provide for initial mass practice, followed by

NOTES/REFERENCES

subsequent distributed practice.

- Develop and practice a clear, concise technique for giving directions.
- Give directions well in advance to permit the student to get mentally and physically ready to perform.
- At appropriate times, provide students with the opportunity to direct their own driving.
- Verbal cues should be provided only when necessary to help the student perform correctly.
- Be ready to use verbal cues during the student's initial performance of complex skills, when a student tends to repeat a specific error, in difficult traffic situations, and in other comparable circumstances.
- Recognize that the need for verbal cues diminishes as the student's driving proficiency increases.
- Be in a position to observe all important elements of student performance, including those not reflected in the movement of the vehicle.
- Thoroughly analyze all aspects of the student's performance to determine the underlying cause of improper performance.
- Clearly identify errors of which the student is unaware.
- In most cases, verbal feedback should be immediate and precise.
- Limit the amount of feedback in terms of the student's capabilities for using it.
- Indicate the appropriate corrective action as part of the feedback process.
- Provide an immediate opportunity to correct errors by performing the skill again.
- Whenever appropriate, verbally reinforce corrected performance.

NOTES/REFERENCES

- Develop special methods designed to cope with special problems.
- Assess the student's progress in relation to the objectives and content of the course.
- Use the test to determine strengths and weaknesses and plan further improvement.
- Take all possible precautions to ensure the objectivity of the test.
- Group students homogeneously for in-car instruction.
- Use a variety of techniques to enhance the value of student observation time.

(5) Commentary Driving

The purpose of emergency vehicle operator's training is to teach new principles and correct any inappropriate driving habits which the student may have. When placed in the controlled situation of a driving school, people will temporarily change habits to conform with the expectations of the instructor. However, commentary driving is an exercise in which both the positive and negative aspects of a person's driving surface.

This portion of the training program is conducted on the open road in a nearby locality. Each instructor will demonstrate to the students the method in which the exercise is to be performed. It will be explained that each student will drive exactly as if he were alone. The exercise requires the driver to verbalize all that is seen and all actions performed.

Each student will drive for approximately 15-20 minutes with the instructor in the passenger seat. The instructor will mention the driving time and will take notes, but this should not distract the student. Notes are taken on both positive and negative driving habits and are recorded for the student's personal evaluation.

NOTES/REFERENCES

A typical narrative during commentary driving might be as follows: "I am placing my hand on the door handle; I am opening the door; I am sitting down now to adjust the seat, the mirror, buckle seat belts. I place the key in the ignition, start the vehicle, release the emergency brake, place in gear. I am turning my head to the rear to check for any vehicle; turn again to the front; I am rechecking the rear by mirror; I place turn signal on; accelerate into lane of travel. I see a red car approaching; I am passing a 'speed 45 mph' sign. . . "

This exercise and verbalization, while perhaps appearing trivial, actually assist the instructor in knowing what the student is perceiving as the driving task progresses. The student will often omit very important situations which should have been observed or will perform some habit which is annoying or disturbing to other drivers, such as forgetting to signal or omitting use of the mirror.

This portion of the training should not be eliminated, as the instructor must be aware of any inappropriate driving habits in order to correct them as the training proceeds.

(6) Review of Skill Exercises

Prior to physically operating a vehicle on the driving range, the student should be familiarized verbally and through instructor demonstrations with each maneuver contained in the following four areas of skill development:

--Phase I, Defensive Driving
--Phase II, Specialized Maneuvers
--Phase III, Emergency Vehicle Operation
--Phase IV, Violator Pursuit.

NOTES/REFERENCES

(a) Phase I, Defensive Driving

This type of driving creates for the vehicle operator a condition of maximized safety. The various aspects of defensive driving instruction discussed herein will assist the officer in refining those skills necessary to operate an enforcement vehicle under normal, non-emergency circumstances.

All of the defensive driving skills described throughout this section have two major objectives:

- To present similar situations which will be encountered in normal, everyday driving and to provide the opportunity to practice solutions to those situations on a driving range before they are actually encountered on the road.
- To prepare for the Specialized Maneuvers and Emergency Vehicle Operation segments of the skill development phase of EVOC training.

In addition to the skills learned, the added pressure of the exercises being timed and penalties for cones being dislodged increase tension. This pressure and tension are in preparation for the pressure and tension experienced during the pursuit and emergency runs which will be made in Phases II and III of the program and in real life on the job.

NOTES/REFERENCES

- OFFSET ALLEY (See Exhibit #A-1)

Since enforcement personnel must drive in very unusual locations, they must be able to maneuver a vehicle into and out of tight situations. This exercise will provide practical experience in the development of such skills.

The driver enters a lane in a forward motion, proceeds through the lane, and comes to a stop in eight (8) seconds or less. Upon signal, the driver will back out of the lane to the starting point in twelve (12) seconds or less, remembering to use the horn to signal all backing maneuvers.

When the student performs this exercise, some common problems which the instructor should be alert to during forward motion include:

--Improper approach position.

--Improper position through alley.

--Improper position at end of forward movement.

During reverse motion, common student problems include:

--Improper position through alley.

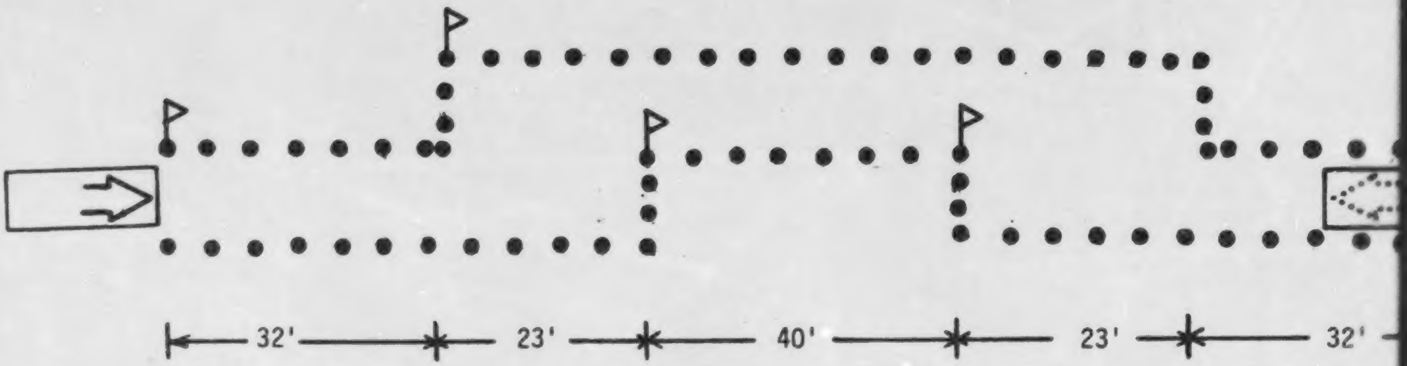
--Remembering that when in reverse, the front turning wheels will swing wide on corners.

--Hand position. (Left hand should be on top of the steering wheel, with right hand merely used as a steadying agent on the wheel, not grasping it. When in reverse, the vehicle's front end has a tendency to be very unsteady, but appropriate hand position will stabilize it).

The student is graded on steering control (number of cones hit), throttle control, time, and smoothness.

EXHIBIT #A-1

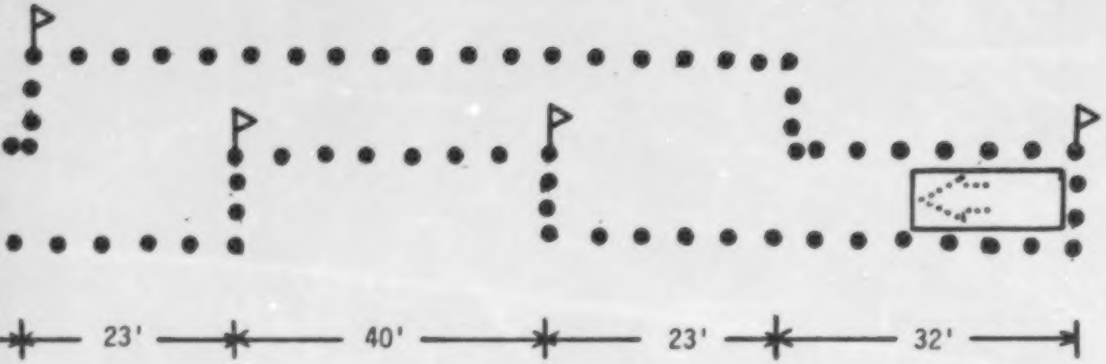
OFFSET ALLEY


32'
23'
40'
23'
32'

Lane width: Vehicle plus two feet

EXHIBIT #A-1

OFFSET ALLEY



Lane width: Vehicle plus two feet

NOTES/REFERENCES

- TURN-AROUND MANEUVER (See Exhibit #A-2)

Upon receiving an emergency call or viewing a serious traffic violation, officers must be able to turn around rapidly and safely in order to respond to the call. Skills developed through this exercise will enable them to meet that demand.

This exercise must be completed in sixty (60) seconds. Time begins when the driver touches the closed vehicle door handle. Begin from outside the vehicle and continue in the following manner:

--Enter vehicle, attach seat belt, release emergency brake, place gear shift into "drive" position, and proceed to driveway #1 on the left side at the far end of the exercise.

--Enter driveway #1 nose first, and back out, remembering to use the horn to signal all backing maneuvers.

--Proceed to a position such that entrance to driveway #2 at the near end of the course can be made in a backing exercise, remembering to use the horn.

--Leave driveway #2 to a position near driveway #1 such that it can be entered in a backing maneuver.

--Upon completion of backward motion into driveway #1, exit the driveway and proceed to the starting point of the course for completion of the exercise.

When the student performs this exercise, some common problems which the instructor should be alert to include:

--Getting into the vehicle or placing vehicle into drive improperly.

--Not securing seat belt or releasing emergency brake.

--Poor position for entrance into driveways for forward and in reverse.

NOTES/REFERENCES

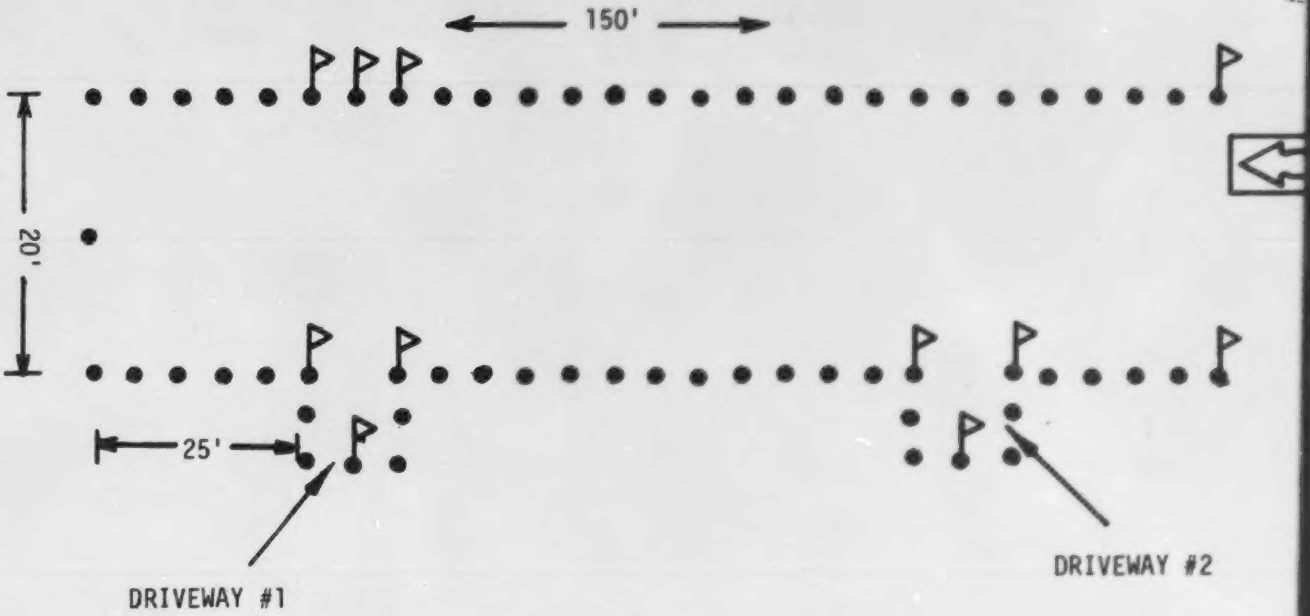
--Driving too deeply into driveways.

--Inadequate judgment in determining where the vehicle is in relation to the cones.

The student will be scored on time, number of cones hit (with a penalty of two seconds for each cone), smoothness, steering forward, steering in reverse, and use of brakes.

EXHIBIT #A-2

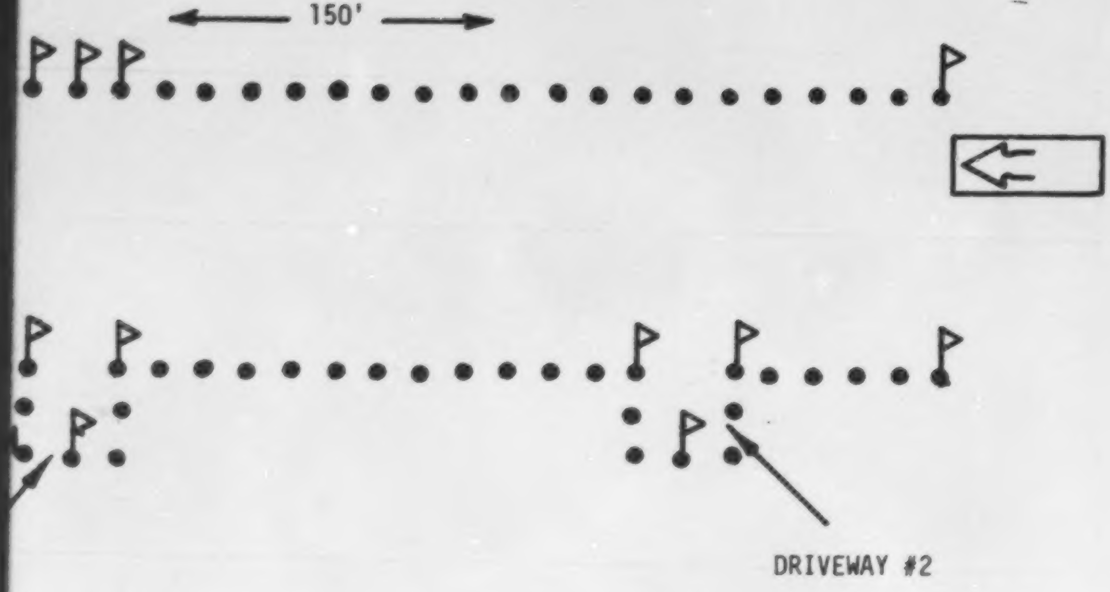
TURN-AROUND MANEUVER


150'
20'
25'
DRIVEWAY #1
DRIVEWAY #2

Driveway dimensions: Width = vehicle plus two feet
Length = fifteen feet

EXHIBIT #A-2

TURN-AROUND MANEUVER


150'
DRIVEWAY #2

riveway dimensions: Width = vehicle plus two feet
Length = fifteen feet

NOTES/REFERENCES

- PARALLEL PARKING (See Exhibit #A-3)

It is essential that officers develop the skill of parallel parking in order to safely respond to calls for assistance in various locations. It is very embarrassing to an agency when a citizen complains of improper parking of an agency vehicle, particularly when it is a result of lack of driver skill.

In this exercise, the vehicle must be parallel parked on both the right and the left side of the road, accomplishing both within thirty (30) seconds without knocking over any cones.

Time for this exercise starts when beginning backward motion to park on the right side. The vehicle shall come within eighteen (18) inches of the curb (simulated by cinder blocks if necessary). Entrance and proper position are essential. The vehicle should not be pulled forward, and when parallel parked, the front tires should always be turned to the left for immediate departure of the enforcement vehicle.

Upon completion of the right-side parallel parking, the driver will proceed down the course to the left side parallel parking and execute a similar maneuver. When the parking maneuver is completed, the driver will exit the parking stall and cross the finish line for completion of the exercise.

When the student performs this exercise, some common problems which the instructor should watch for include:

--Not knowing when to begin turning movement for entrance into parking stall.

--Not knowing when to counter-steer, once entrance into parking stall has begun.

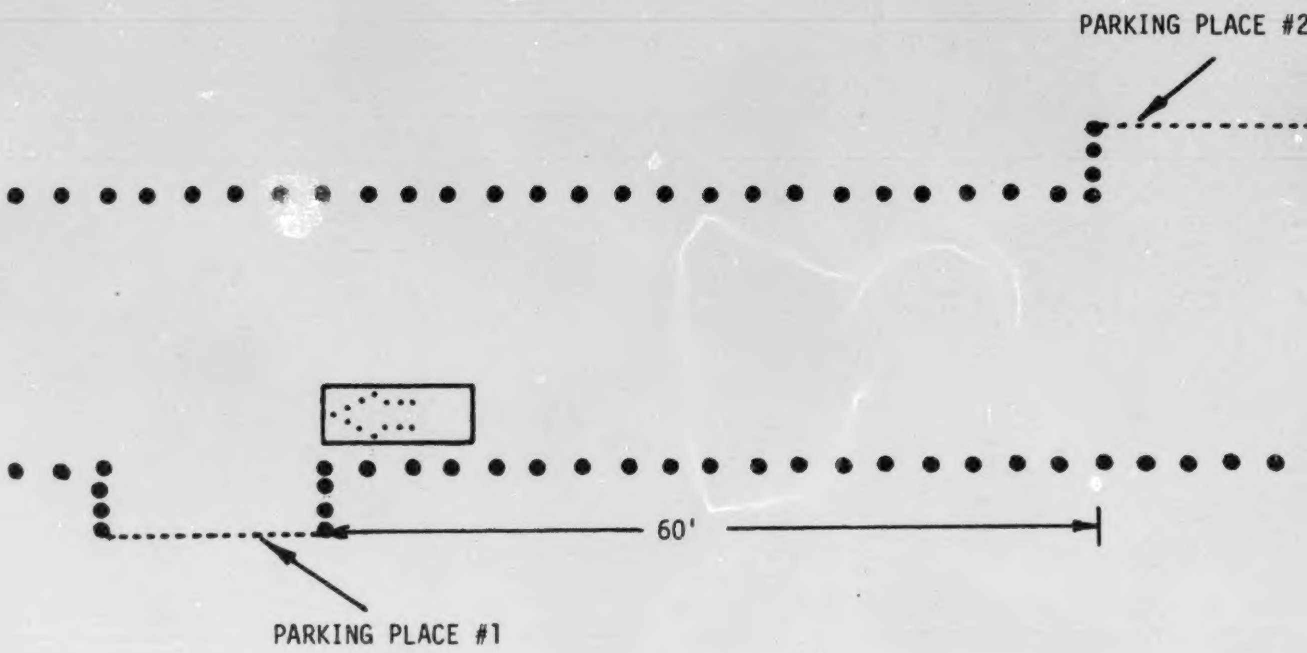
--Improper distance from curb (must be within 18 inches).

--Wanting to pull forward and position vehicle.

Scoring will be based on time, steering control, throttle control, and position.

EXHIBIT #A-3

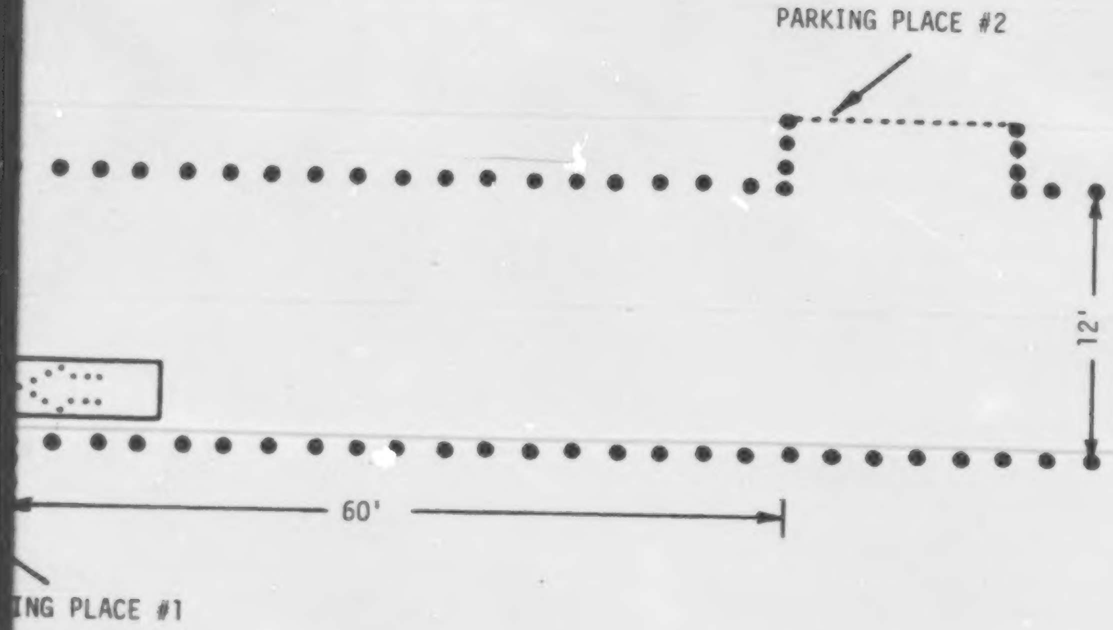
PARALLEL PARKING


PARKING PLACE #2
60'
PARKING PLACE #1

Parking place: Width = eight feet
Length = Vehicle plus four feet

EXHIBIT #A-3

PARALLEL PARKING


PARKING PLACE #2
12'
60'
ING PLACE #1

Parking place: Width = eight feet
Length = Vehicle plus four feet

NOTES/REFERENCES

- DOUBLE LANE CHANGE (See Exhibit #A-4)

As will be further demonstrated in the section of this manual dealing with the Emergency Vehicle Operation phase of EVOC training, proper lane-changing is an essential component. A change of lane to avoid a hazard can be executed more rapidly and safely than an all-wheel skid.

Approaching the exercise at 25 mph, the operator will successfully negotiate the change of lane without dislodging any cones or slowing speed. Radar will be in operation to ensure that a speed of 25 mph is maintained throughout the exercise. Upon the exit of the last lane, the driver will turn around and approach from the opposite direction (entering where exited), and maneuver through the course again, maintaining a constant 25 mph speed.

When the student performs this exercise, some common problems which the instructor should watch for include:

--Improper position of vehicle in relation to cones.

--Tendency to over-steer or under-steer.

--Improper hand position.

--Improper use of brakes.

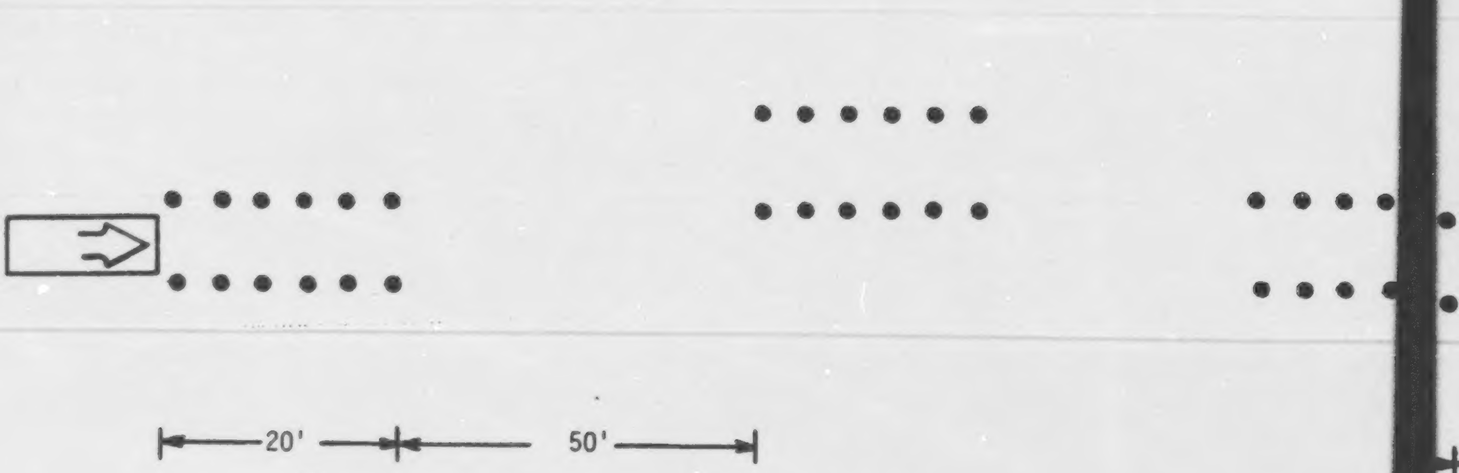
--Slowing of vehicle without use of brakes.

Grading is based on smoothness, throttle control (use of brakes), and steering control. The driver will be penalized for cones dislodged according to the following formula:

0 cones	100 points
1 cone	90 points
2 cones	80 points
3 cones	70 points
4 cones	fail

EXHIBIT #A-4

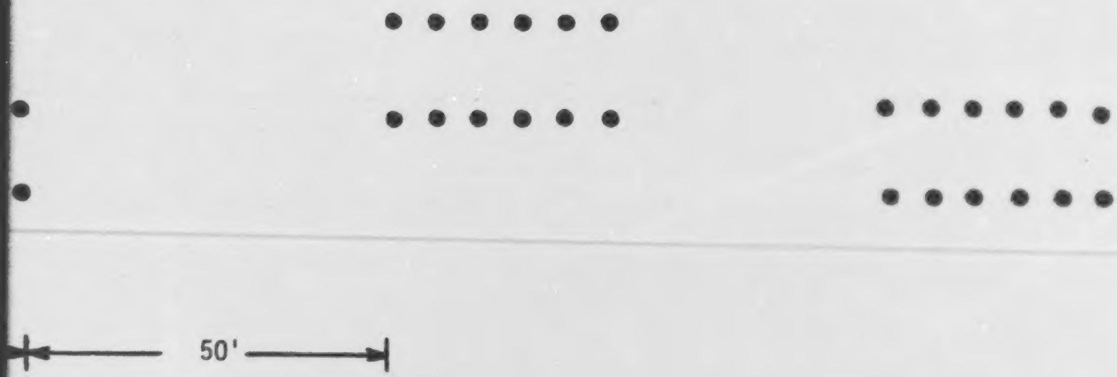
DOUBLE LANE CHANGE



Lane width: Vehicle plus two feet

EXHIBIT #A-4

DOUBLE LANE CHANGE



Lane width: Vehicle plus two feet

NOTES/REFERENCES

- CONE JUDGMENT COURSE (See Exhibits #A-5, A-5-1, A-5-2, A-5-3)

This series of maneuvers is utilized in order to better develop proper judgment and more precise steering skills.

The course consists of a light bulb turn, a backing exercise, and a "Y" turn. (This is also a timed course, but will be customized to the specific location on which the skill development phase is to be housed, depending upon the conditions which exist at the location).

The light bulb will be entered by the vehicle at a speed comfortable to the driver. As the vehicle progresses around the circle, the distance between the cones will diminish, requiring increasing concentration on the part of the driver. Exiting the light bulb, the operator will proceed to a driveway area and, remembering to sound horn, will back into the coned area. Placing the vehicle into "drive", the operator will exit the driveway and proceed to an area on which a "Y" turn will be performed, then proceeding past the driveway into and through the light bulb. Time will cease when the vehicle passes the starting line.

When the student performs this exercise, some common problems which the instructor should watch for include:

--Excessive speed.

--Improper vehicle position.

--Improper turning movement (light bulb and Y-turn).

--Not deep enough into driveway (backing exercise).

--Improper backing (Y-turn).

The cone judgment course is graded on smoothness, throttle control, steering control, and time.

NOTES/REFERENCES

Cones dislodged from position will be counted according to the following formula:

0 cones - 100 points
1-2 cones - 95 points
3-5 cones - 90 points
6-8 cones - 85 points
9-11 cones - 80 points
12-14 cones - 75 points
15-17 cones - 70 points
18 cones - fail

EXHIBIT #A-5

CONE JUDGMENT COURSE

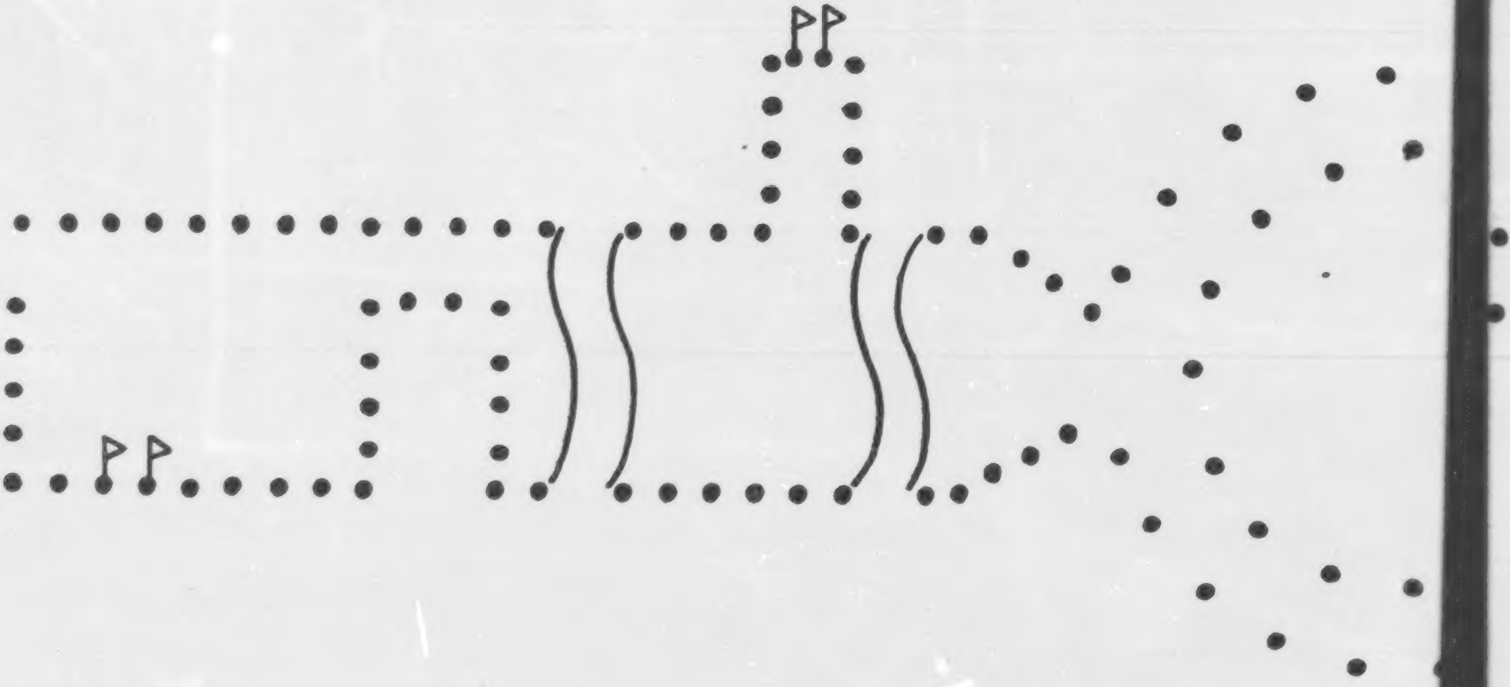


EXHIBIT #A-5

CONE JUDGMENT COURSE

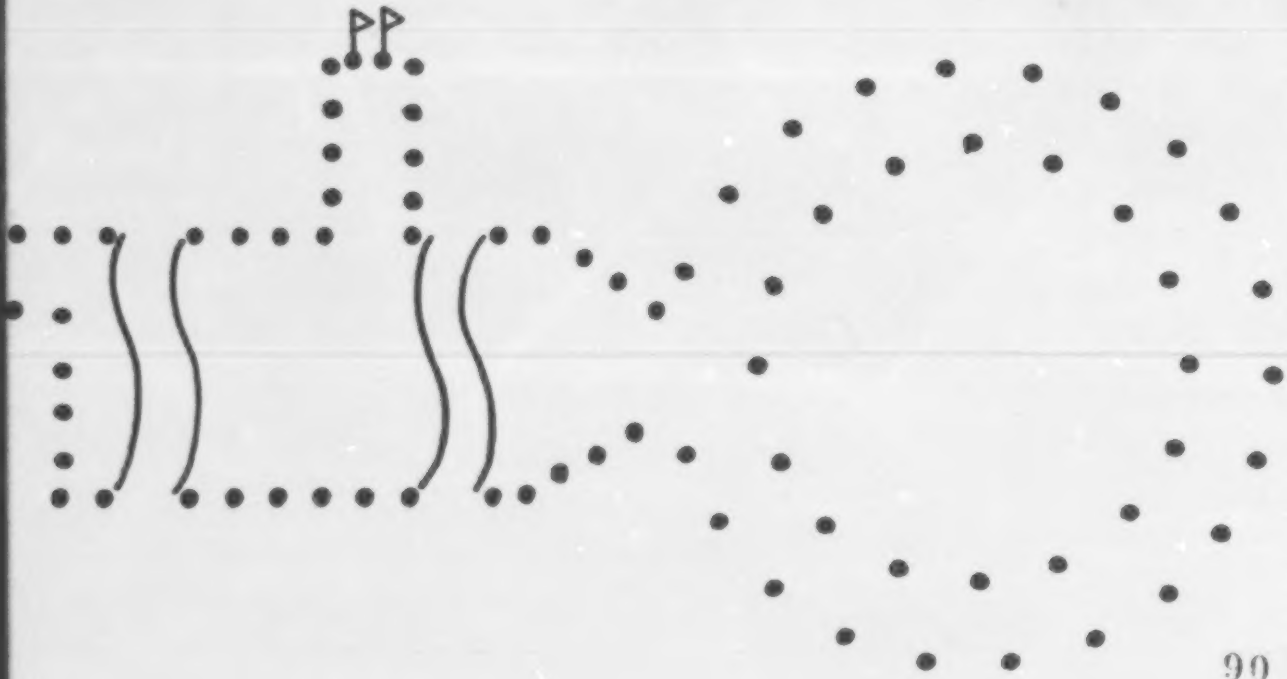
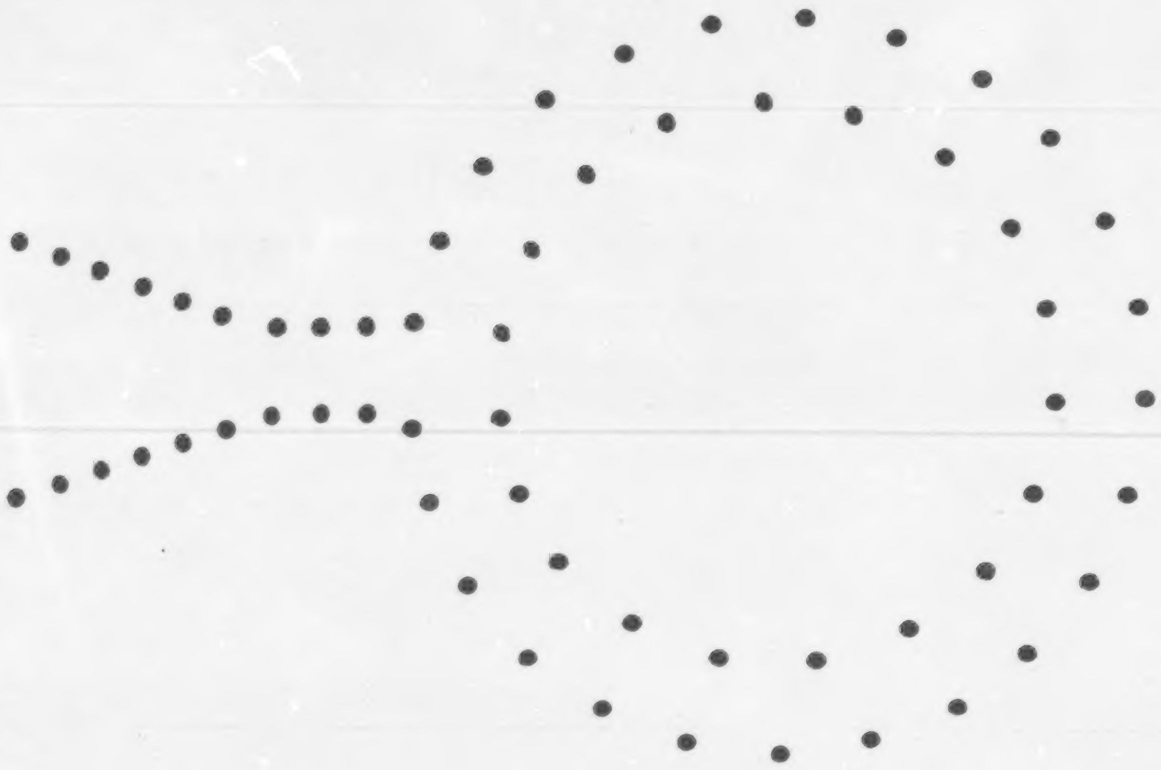


EXHIBIT #A-5-1

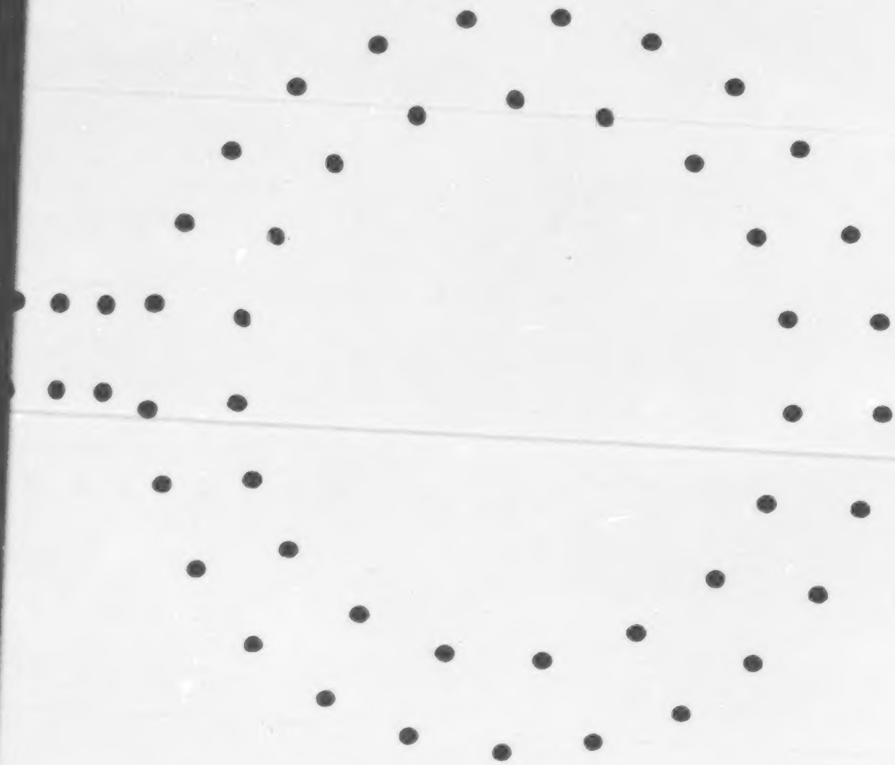
LIGHT BULB



Enter circle to right; cones diminish in width near exit.
Turning radius of test vehicle is radius of circle.

EXHIBIT #A-5-1

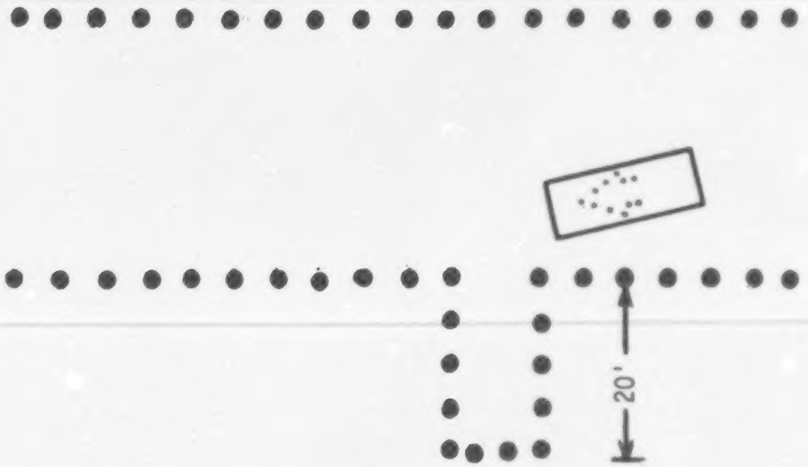
LIGHT BULB



circle to right; cones diminish in width near exit.
ning radius of test vehicle is radius of circle.

EXHIBIT #A-5-2

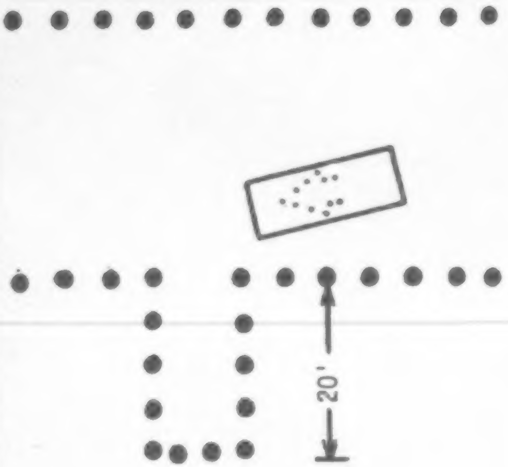
BACKING MANEUVER



Driveway width: Vehicle plus two feet

EXHIBIT #A-5-2

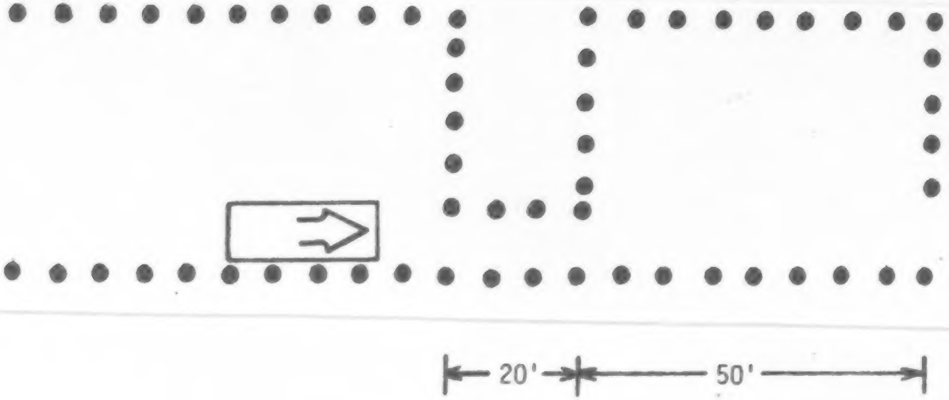
BACKING MANEUVER



Driveway width: Vehicle plus two feet

EXHIBIT #A-5-3

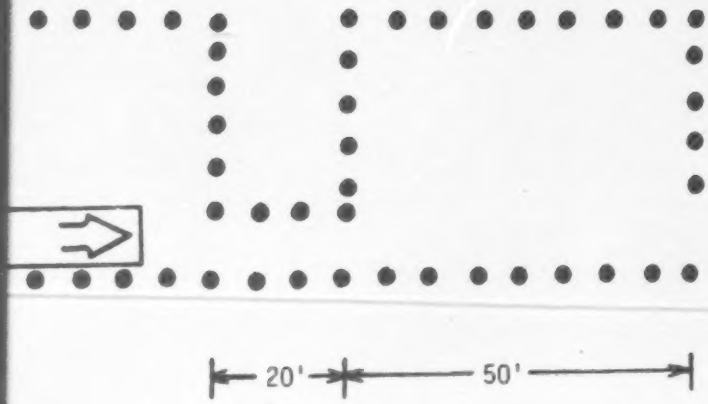
TURN-AROUND MANEUVER



Entry lane dimensions: Vehicle plus eighteen inches

EXHIBIT #A-5-3

TURN-AROUND MANEUVER



Entry lane dimensions: Vehicle plus eighteen inches

NOTES/REFERENCES

(b) Phase II, Specialized Maneuvers

These exercises are simulations of actual driving hazards encountered every day. The defensive driving skills learned in Phase I are preparatory for this segment of the training, which, in turn, is essential to Phase III, Emergency Vehicle Operation.

The speeds during this portion will increase to a maximum of 40 mph. While that speed may not seem very fast, under the conditions which will be present during the exercise, 40 mph will appear excessive to the driver.

Again, the instructor will first explain and demonstrate each maneuver. As in all phases of this program, safety is to be stressed and demanded. Any unacceptable or dangerous behavior will be grounds for immediate dismissal from the program.

NOTES/REFERENCES

- SERPENTINE (See Exhibit #A-6)

The serpentine is designed to develop the driver's ability to keep a vehicle under control during heavy and sudden weight changes. The importance of proper hand position, body position, and speed control will become apparent during this exercise. The effects of under-steering and over-steering are also demonstrated.

The driver will become familiar with the serpentine after making practice runs and will then make three (3) test runs at 30, 35, and 40 mph respectively. The speed is checked by radar, and communication with the driver is maintained.

The exercise consists of a series of cones placed in a straight line at measured distances apart. The driver is to enter the course at the respective speed with the first cone on the left side of the vehicle, the second cone on the right side of the vehicle, the third cone on the left side, and so on, continuing to alternate sides, thus weaving through the serpentine at a constant speed. Any slowing or braking action should be immediately brought to the operator's attention via the radio, and the condition corrected.

When the student performs this exercise, some common problems which the instructor should be alert to include:

--Indecision upon approach of first cone.

--Failure to maintain speed.

--Improper hand position.

--Over-steering vehicle, causing greater weight change and eventual spin-out.

--Improper vehicle position in relation to cones.

The student will be graded on speed--whether too fast or too slow, (refer to the grading chart in the Appendix), number of cones hit, (penalty of five points for each cone), and smoothness.

EXHIBIT #A-6

SERPENTINE

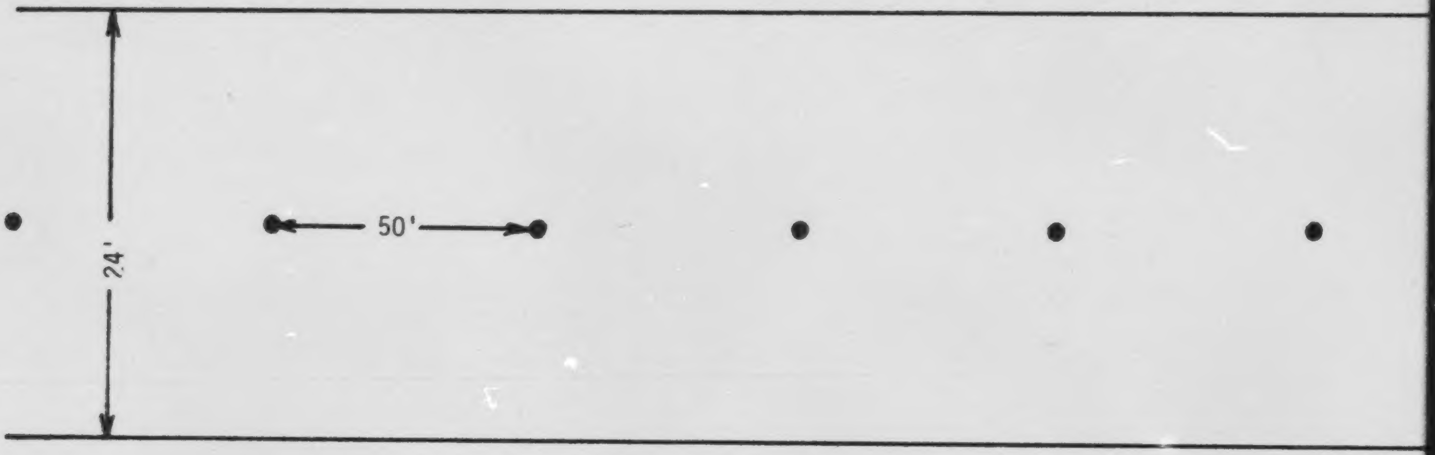
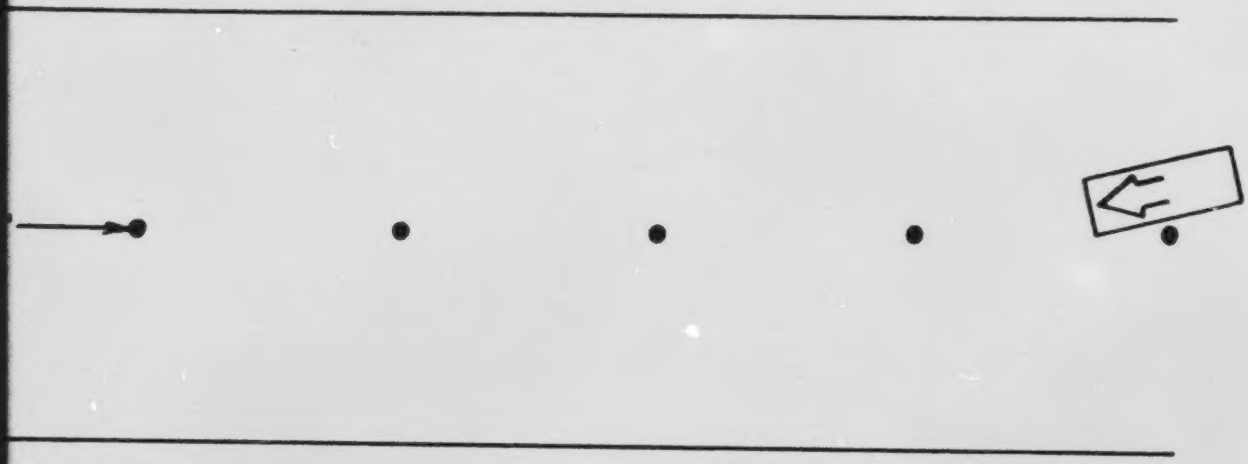


EXHIBIT #A-6

SERPENTINE



NOTES/REFERENCES

- REACTION COURSE (See Exhibit #A-7)

In everyday driving, emergency situations arise, and how the driver copes with these situations is critical. The reaction course was developed to assist the officer in becoming familiar with personal limitations as well as capabilities. Skills learned during the serpentine are used in this exercise.

A signal, (either a normal traffic light or a flag regulated by an instructor), is approached at a speed of 30 mph (maintained by radar). Predetermined signals or colors are given to represent a left turn, right turn, or stop. (For example, green could be designated to mean turn right, yellow to mean turn left, and red to indicate stop).

When a signal is given, the driver must react correctly and maneuver the vehicle through the proper lane without dislodging any cones. This exercise is also run at 35 and 40 mph, with the graded speed being 40 mph. The student then has three (3) opportunities to become familiar with the exercise.

When the student performs this maneuver, some common problems which the instructor should watch for include:

--Improper speed.

--Failure to anticipate signal.

--Wrong reaction.

--Jerky movements.

--Improper hand position.

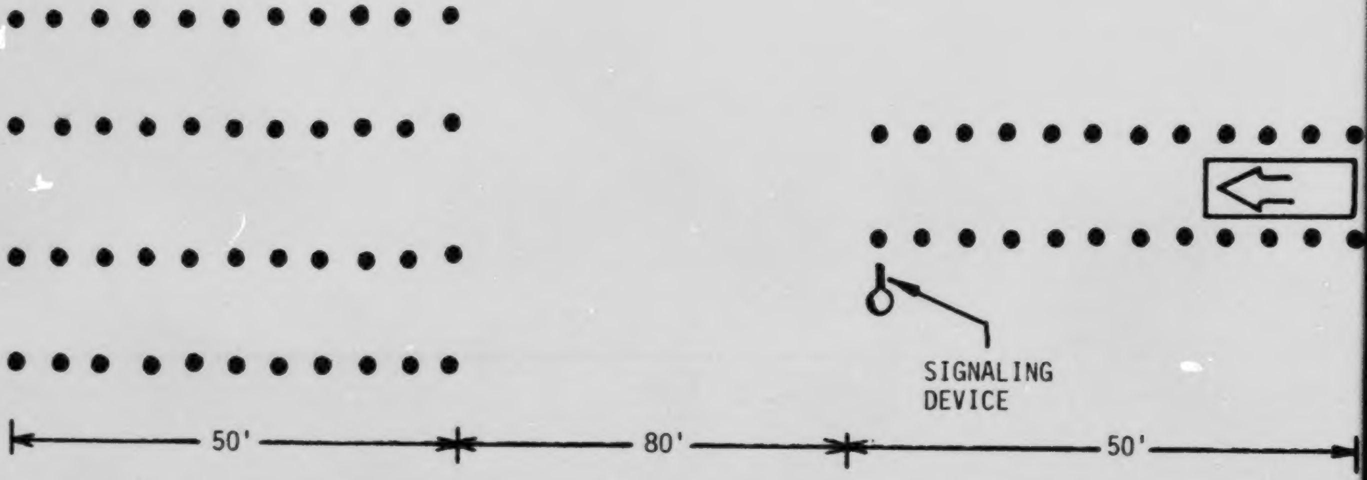
--Improper use of brakes; possible loss of steering.

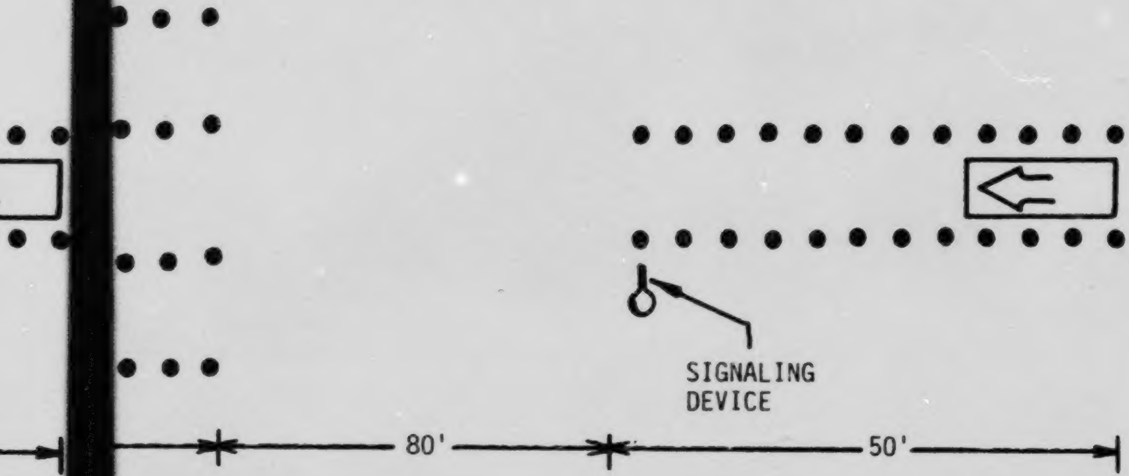
--Over-steering; spinning-out.

--Concentration on signal.

--Committed to one lane and attempting to move to another, causing spin-out.

This exercise will be graded on the basis of speed--whether too fast or too slow, cones hit (2 points for each cone), anticipation, control, and smoothness.


SIGNALING DEVICE


SIGNALING DEVICE
80'
50'

NOTES/REFERENCES

- CONTROLLED BRAKING (See Exhibit #A-8)

Once a vehicle begins to slide (all wheels locked), the driver has absolutely no control over the steering mechanism. Although the steering wheel can be turned the full range both left and right, when the front tires are locked, this will not affect the direction of the vehicle. It is therefore vital that an enforcement officer be properly trained in brake application and the effect it has on a vehicle.

In this exercise, a coned lane will be approached at a pre-determined speed (25-35 mph). At a given point in the lane, the driver will be instructed to stop. The vehicle must be stopped without sliding the tires, while at the same time driving around a cone barricade placed within the lane.

When the student performs this exercise, some common problems which the instructor should be alert to include:

--Complete brake lock-up and loss of control.

--Improper hand position.

--Anticipation and premature application of brake.

--Failure to return to right lane.

--Complete stop not encountered.

--Over-steering; hitting barricade.

This exercise will be graded on braking action, steering control, and smoothness.

EXHIBIT #A-8

CONTROLLED BRAKING

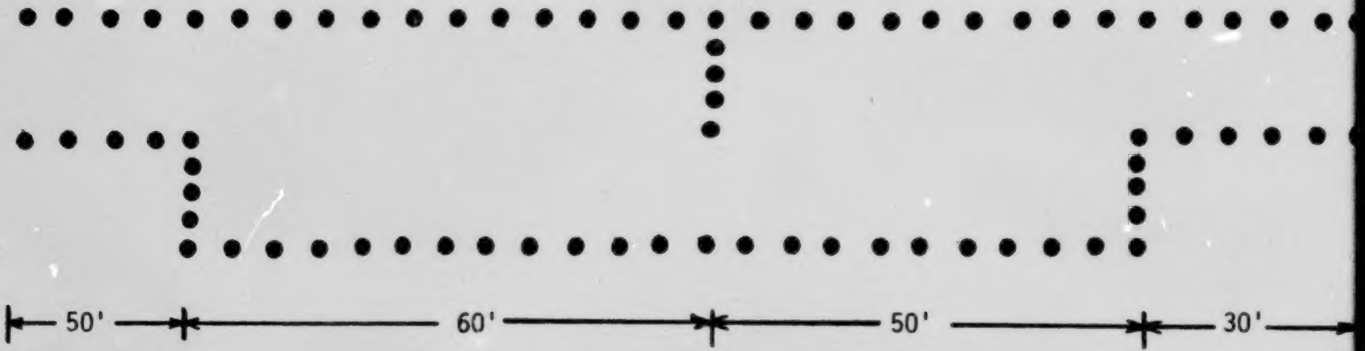
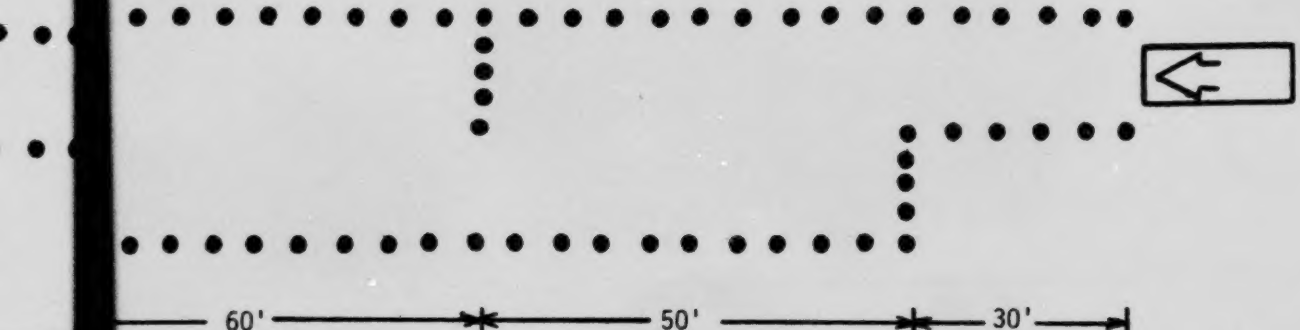


EXHIBIT #A-8

CONTROLLED BRAKING



NOTES/REFERENCES

(c) Phase III, Emergency Vehicle Operation

The Emergency Vehicle Operation phase is designed to provide the student with the opportunity to demonstrate and practice the skills learned up to this point in the course.

The actual physical layout of the course on which this phase of the training will be conducted depends entirely on the local facilities. (See Exhibits #A-9, A-9-1, A-9-2, and A-9-3 for illustrations of suggested layouts on an oblong, rectangular, square, or parking lot facility). This phase will be eliminated from the training if the physical environment is such that the safety of the students and equipment cannot be maintained and guaranteed.

Although an exact course layout to be used at all facilities is impossible to develop because of the variety of physical characteristics of the sites expected to be used during implementation of EVOC training throughout Virginia, it is recommended that certain maneuvers be included in this portion of the training:

--A 180° turn.

--An "S" maneuver.

--Width judgment at accelerated speed.

--Controlled braking.

All of the above maneuvers can be constructed with cones and still be very effective.

When the student performs these exercises, some common problems which the instructor should be alert to include:

--Failure to perform pre-driving habits.

--Improper hand position.

--Improper vehicle position and approach to curve.

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--Too fast or too slow speed.

--Inadequate apex on curves.

--Early or late speed from curves.

--Inappropriate braking techniques (too much; too late; left foot).

--Inadequate control of vehicle.

--Lack of confidence.

--Incomplete physical control of self.

The student will be graded on vehicle operation, hand position, road position, braking techniques, speed into curve, apex on curves, and speed exiting curves.

EXHIBIT #A-9

EMERGENCY VEHICLE OPERATION:
SUGGESTED LAYOUT FOR AN OBLONG PHYSICAL FACILITY

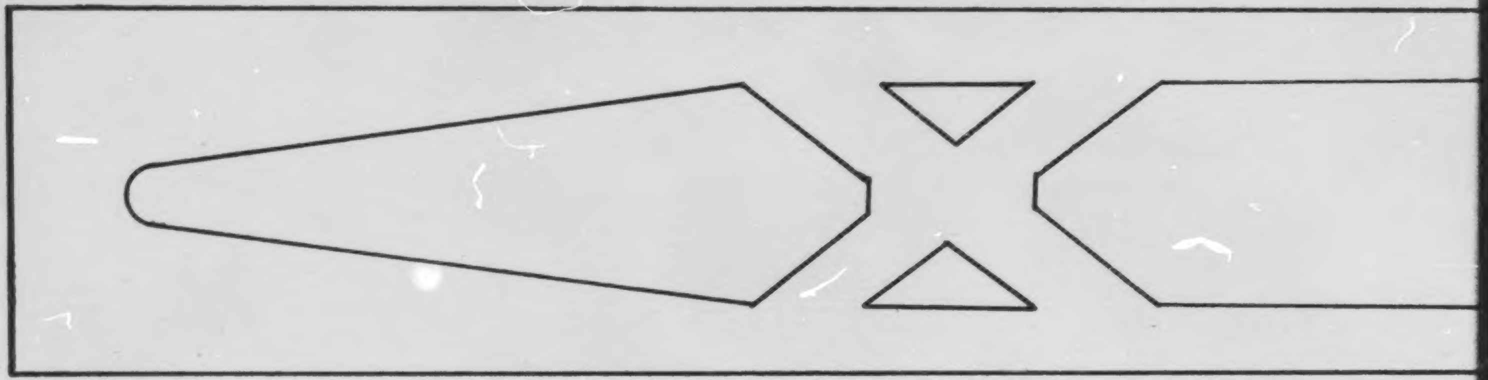


EXHIBIT #A-9

EMERGENCY VEHICLE OPERATION:
SUGGESTED LAYOUT FOR AN OBLONG PHYSICAL FACILITY

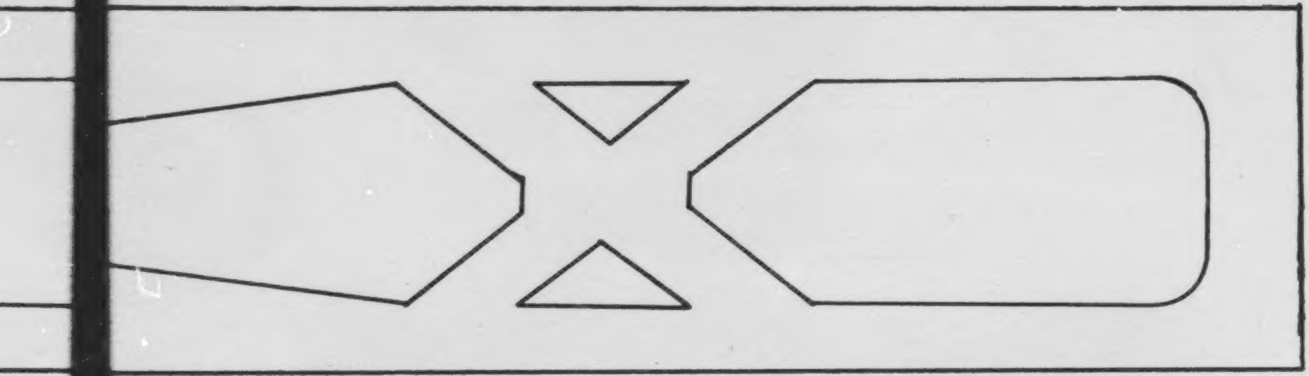


EXHIBIT #A-9-1

EMERGENCY VEHICLE OPERATION:
SUGGESTED LAYOUT FOR A RECTANGULAR PHYSICAL FACILITY

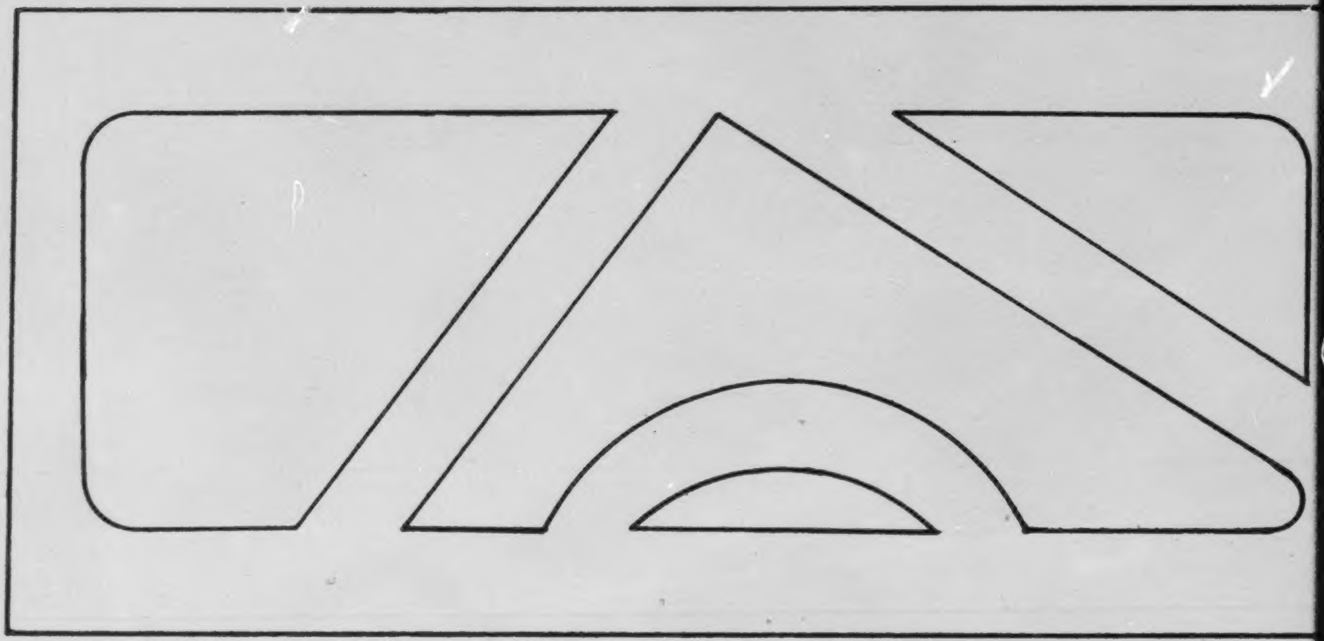


EXHIBIT #A-9-1

EMERGENCY VEHICLE OPERATION:

GGESTED LAYOUT FOR A RECTANGULAR PHYSICAL FACILITY

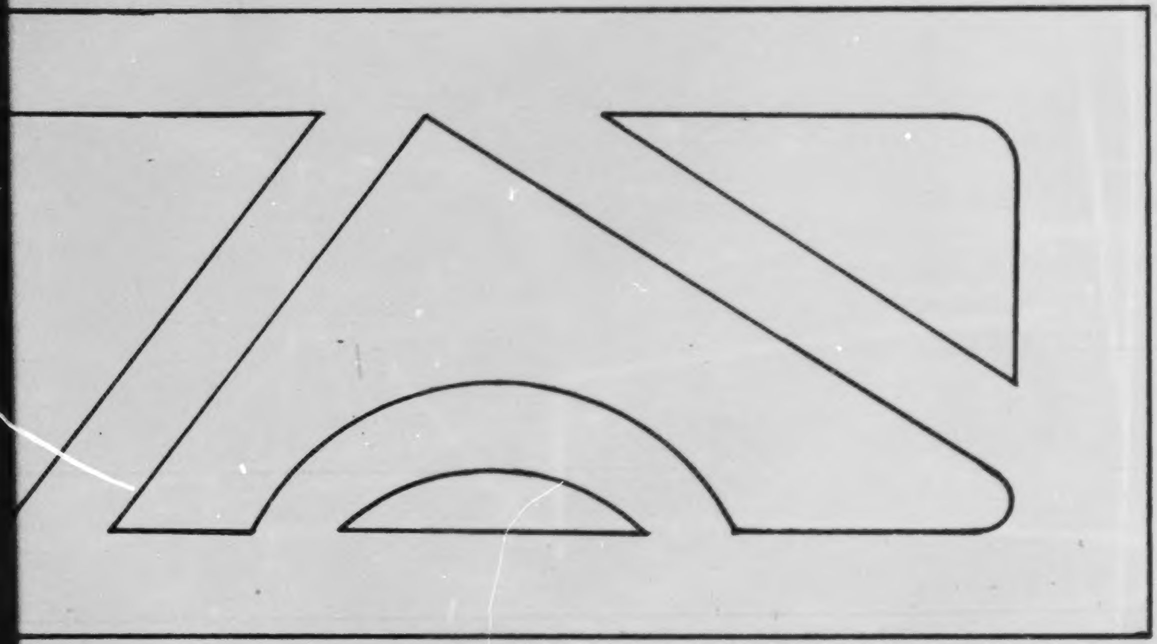


EXHIBIT #A-9-2

EMERGENCY VEHICLE OPERATION:
SUGGESTED LAYOUT FOR A SQUARE PHYSICAL FACILITY

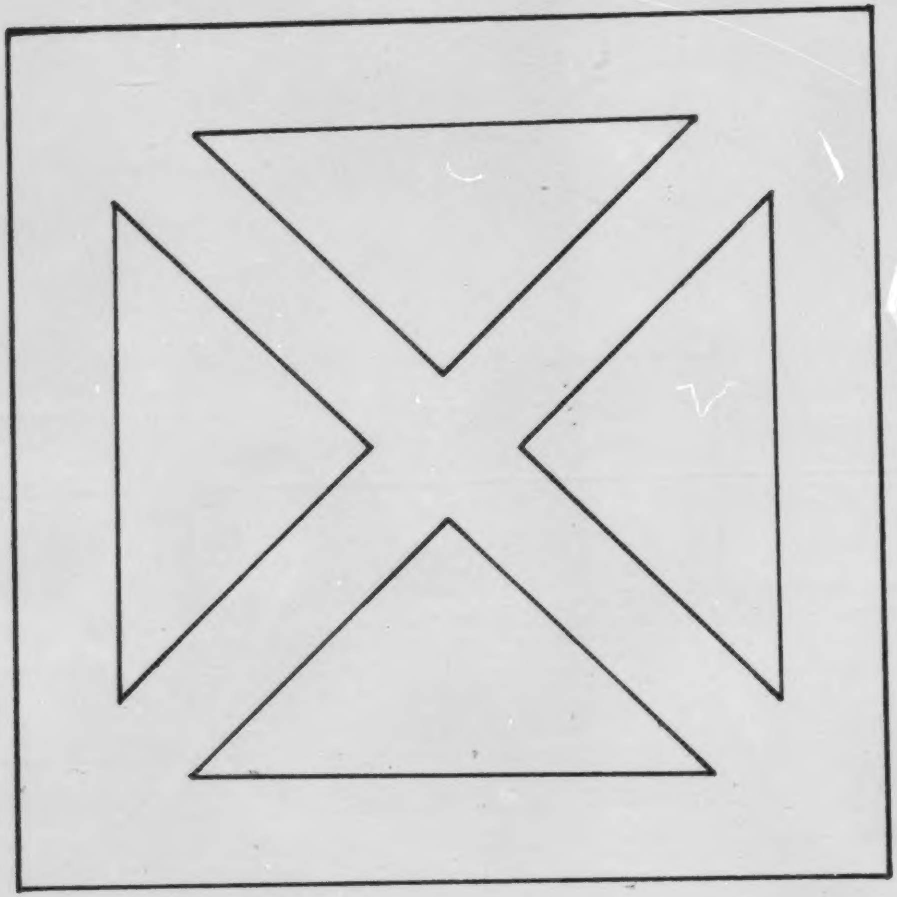


EXHIBIT #A-9-3

EMERGENCY VEHICLE OPERATION:

SUGGESTED LAYOUT FOR A SHOPPING CENTER PARKING LOT PHYSICAL FACILTIY

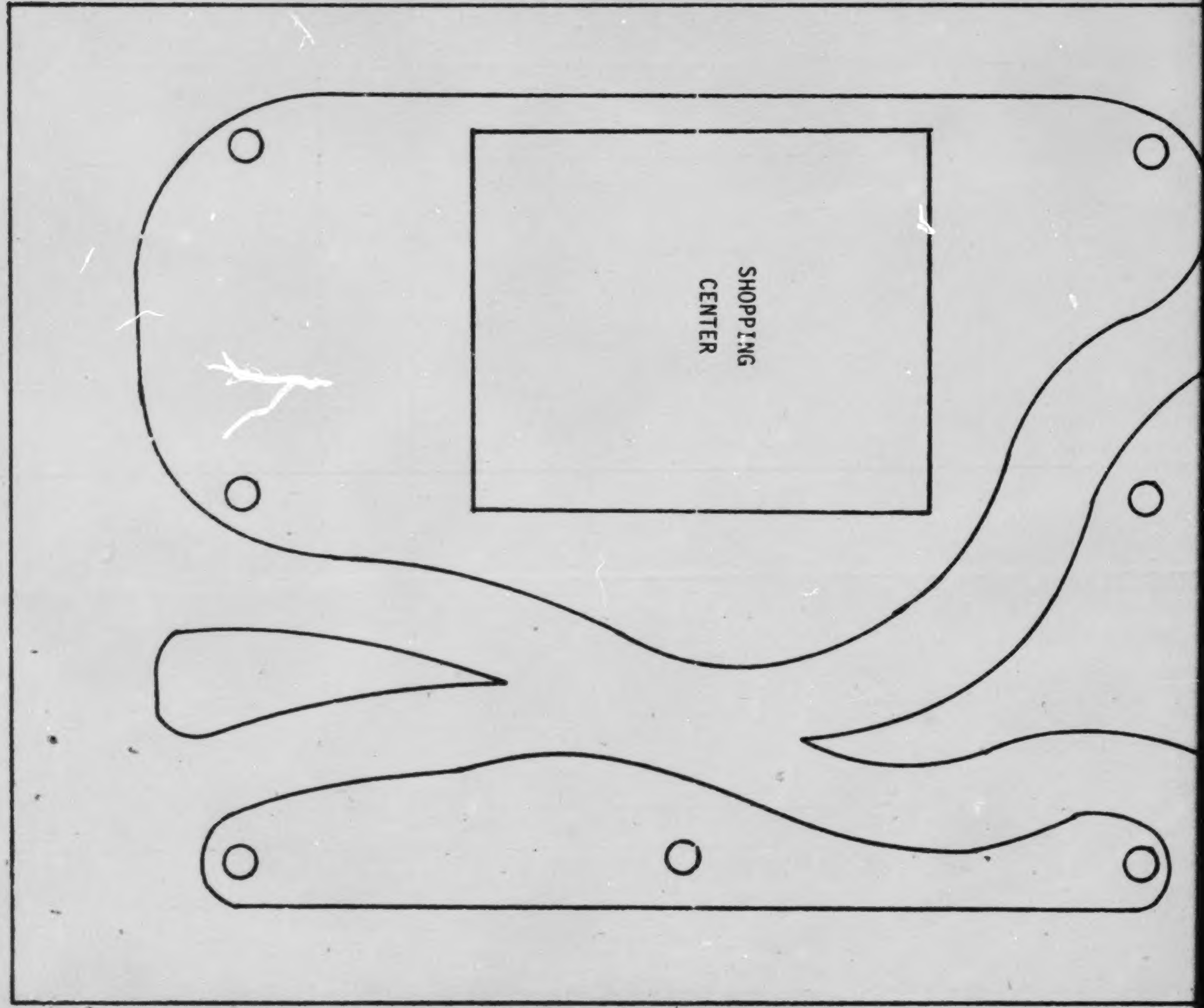
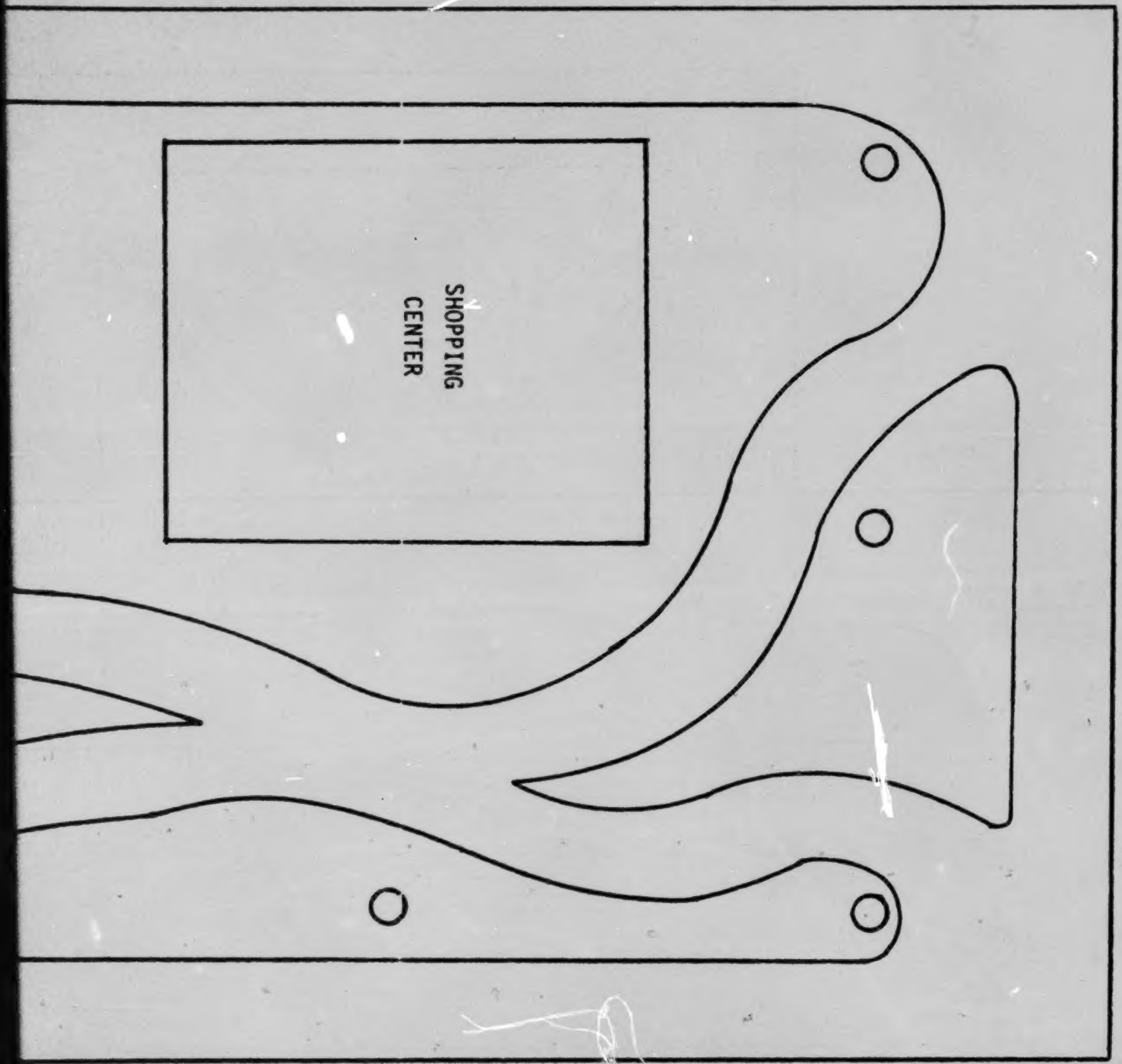

○ LIGHT POLES
SHOPPING CENTER

EXHIBIT #A-9-3

EMERGENCY VEHICLE OPERATION:

TED LAYOUT FOR A SHOPPING CENTER PARKING LOT PHYSICAL FACILTIY


SHOPPING CENTER

NOTES/REFERENCES

(d) Phase IV, Violator Pursuit

This portion of the course will be eliminated if the physical environment will not allow for full safety of the drivers and equipment. The chase scene will be made realistic through the use of actual emergency equipment. Sirens will be prerecorded and replayed on tape records inside the vehicle, thus eliminating all external sounds.

There will only be two vehicles on the pursuit course at any time--one driven by an instructor, and the other driven by a student accompanied by an instructor. However, the student will conduct himself as if the instructor were not present in the vehicle. (The instructor is present for grading purposes only). The pursuit will last from ten to fifteen minutes and will be conducted as if a violator were actually attempting to evade the officer.

Some common student problems which the instructor should watch for include:

--Improper use of radio.

--Too close or too far from the violator.

--Improper position of vehicle in relation to that of the violator.

--Improper use of flashers.

--Use of emergency brake.

--Taking vehicle gear selector out of "drive."

--Placing vehicle gear selector in "reverse" and exiting vehicle.

--Leaving door open.

--Approaching violator's vehicle too fast, too slow, or wrong position at door.

--Improper conduct with violator.

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Phase IV can be conducted on the same physical layout as that used for Phase III, Emergency Vehicle Operation. (See Exhibits #A-9, A-9-1, A-9-2, and A-9-3 for illustrations of suggested layouts on an oblong, rectangular, square, or parking lot facility).

The student will be graded on many items, including: vehicle operation, hand and foot positions, speed control, braking techniques, use of emergency equipment, use of radio, stopping the violator, vehicle position, approach to violator, conduct with violator, and judgment and decision-making.

In summary, the student should now be aware that keen eyesight, instant perception and response, positive attitude, good judgment, emotional stability, thorough knowledge of traffic regulations, and considerable familiarity with the intricacies of the roadway being patrolled are essential to safely execute a pursuit driving task.

CHAPTER FOUR

PRACTICAL APPLICATIONS: FIRE DEPARTMENTS

NOTES/REFERENCES

CHAPTER FOUR

PRACTICAL APPLICATIONS: FIRE DEPARTMENTS

INTRODUCTION

Chapter Two of this training guide has concentrated upon that background information which is necessary for all students to be familiar with before initiating operation of an emergency vehicle. Qualifications, skills, objectives, performance criteria, and other issues have been discussed in order to equip the student with the foundations upon which appropriate application of emergency vehicle driving skills are based.

With this understanding and appreciation of the complexities of emergency vehicle operation, the student should now be ready to assemble data and formulate concepts and techniques into actual operational procedures. Therefore, Chapter Four is designed to familiarize students with the legal aspects, policies, responsibilities, habits, and skills necessary for the proper operation of an emergency vehicle.

While the emergency operation of enforcement, fire, and ambulance vehicles involves many similarities, there are also distinct characteristics pertaining to each of these service areas alone. For this reason, each area--enforcement, fire, and emergency medical services--will be discussed separately to aid in the organized presentation of the material by the instructor.

STUDENT PERFORMANCE OBJECTIVES

Upon completion of this portion of the training, the driver of fire department equipment should have developed those skills and attitudes which will enable operation of the fire department's motor vehicle with safety, precision, and confidence.

THE ROLE OF EMERGENCY VEHICLE OPERATOR'S TRAINING IN FIRE DEPARTMENTS

As an essential part of their function, firefighters are required to operate fire apparatus in any number of circumstances. But often they are inadequately prepared to perform

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this driving function in a professional manner.

The operator of fire department equipment must not only be an expert driver in normal traffic, but must also contend with emergency situations, operate a vehicle during weather conditions in which the average motorist would be reluctant to drive, and may have to compensate for fatigue.

According to the National Safety Council, about 26,000 emergency vehicles were involved in motor vehicle accidents in 1973, some 300 of which were fatalities.[1] Virginia's contribution to this total was substantial: 8 fatalities, 269 personal injury crashes, and 803 property damage crashes, for a total of 1,080 crashes.[2] Yet, drivers of these vehicles often receive little, if any, formalized training in the driving function.

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[1] National Safety Council, Accident Facts (Chicago, Illinois: National Safety Council, 1974), p. 56.

[2] Virginia Crash Facts 1973 (Richmond, Virginia: Department of State Police, 1974), pp. 52-54.

NOTES/REFERENCES

(A) LEGAL ASPECTS

Before any skill techniques can appropriately be applied to the driving task, it is essential that the fire department driver be familiar with and thoroughly comprehend the legal responsibilities and regulations governing operation of an enforcement vehicle under emergency situations. In the state of Virginia, the following sections of the Motor Vehicle Code are applicable to emergency vehicle operation and should be completely understood by the firefighter before engaging in the emergency driving task.

46.1-168 CHAPTER APPLICABLE TO DRIVERS OF ALL VEHICLES REGARDLESS OF OWNERSHIP.--The provisions of this chapter applicable to the drivers of vehicles upon the highways shall apply to the drivers of all vehicles regardless of ownership subject to such specific exceptions as are set forth in this chapter. (Code 1950, Section 46-181; 1958, c. 541).

Cross reference.--As to consideration of defendant's prior traffic record before imposing sentence for certain traffic offenses, see Sections 19.2-186.1 and 19.2-186.2.

State statutes regulating the flow of traffic at intersections take precedence over local ordinances which prohibit drivers of vehicles from passing through or between processions, unless specific exception is made in the statutes. Paige v. Edgar, 210 Va. 54, 168 S.E.2d 103 (1969).

Police cars, ambulances, etc.--In Virginia the drivers of police cars, ambulances, and other State, county, and city-owned vehicles are subject to all traffic regulations unless a specific exception is made. Virginia Transit Co. v. Tidd, 194 Va. 418, 73 S.E.2d 405 (1952); Manhattan For Hire Car Corp. v. O'Connell, 194 Va. 398, 73 S.E.2d 410 (1952). For statute providing exceptions for certain emergency vehicles, see Section 46.1-226.

46.1-199 EXCEPTIONS TO SPEED LIMITATIONS; WHEN EXEMPTIONS APPLICABLE; PROSECUTION FOR RECKLESSNESS; CIVIL LIABILITY.--(a) The speed limitations set forth in this chapter shall not apply to vehicles when operated with due regard for safety under the direction of the police in the chase or apprehension of violators of the law, or of persons charged with or suspected of any such violations, or in testing

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the accuracy of speedometers on police vehicles, or in testing the accuracy of the radio microwave or other electrical devices specified in Section 46.1-198 nor to fire department vehicles when traveling in response to a fire alarm or pulmotor call, nor to ambulances when traveling in emergencies outside the corporate limits of cities and towns.

(b) These exemptions, hereinbefore granted to such a moving vehicle, shall apply only when the operator of such vehicle displays a flashing, blinking, or alternating red light and sounds a siren, bell, exhaust whistle, or air horn designed to give automatically intermittent signals, as may be reasonably necessary, and, only when there is in force and effect for such vehicle standard automobile liability insurance covering injury or death to any one person in the sum of at least one hundred thousand dollars in any one accident, and subject to the limit for one person, to a limit of three hundred thousand dollars because of bodily injury to or death of two or more persons in any one accident, and to a limit of ten thousand dollars because of injury to or destruction of property of others in any one accident. Such exemptions shall not, however, protect the operator of any such vehicle from criminal prosecution for conduct constituting reckless disregard for the safety of persons and property. Nothing in this section shall be construed to release the operator of any such vehicle from civil liability for failure to use reasonable care in such operation. (Code 1950, Section 46-216; 1950, p. 84; 1958, c. 541; 1964, c. 15; 1966, c. 699; 1974, c. 365).

Cross reference.--For further provisions as to exemptions, see Section 46.1-226.

The 1974 amendment substituted the language beginning "one hundred thousand dollars in any one accident" for "twenty-five thousand dollars" at the end of the first sentence of subsection (b).

Law Review.--For survey of Virginia law on torts for the year 1969-1970, see 56 Va. L. Rev. 1419 (1970).

The effect of this section, creating exemptions to speed limits, is that violation of the statute fixing speed limits, Section 46.1-193, is not negligence per se if the exemption is applicable. Yates v. Potts, 210 Va. 636, 172 S.E.2d 784 (1970).

Speed limitations do not apply to police vehicles operated, with due regard for safety, in apprehension of violators. Yates v. Potts, 210 Va. 636, 172 S.E.2d 784 (1970).

The requirement that a siren be sounded "as may be reasonably necessary" should be interpreted with due regard for safety of police officer conducting a chase. Yates v. Potts, 210 Va. 636, 172 S.E.2d 784 (1970).

Applied in Virginia Transit Co. v. Tidd, 194 Va. 418, 73 S.E.2d 405 (1952); Whittaker v. Van Fossan, 297 F.2d 245 (4th Cir. 1961).

46.1-225 APPROACH OF POLICE OR FIRE-FIGHTING VEHICLES, RESCUE VEHICLES OR AMBULANCES; VIOLATION AS FAILURE TO YIELD RIGHT-OF-WAY.--(a) Upon the approach of any vehicle listed in paragraph (a) of Section 46.1-226 giving audible signal by sirens, exhaust whistle, or air horn designed to give automatically intermittent signals, the driver of every other vehicle shall immediately drive the same to a position as near as possible and parallel to the right-hand edge or curb, clear of any intersection of highways, and shall stop and remain in such position unless otherwise directed by a police or traffic officer until such vehicle shall have passed. This provision shall not operate to relieve the driver of any such vehicle from the duty to drive with due regard for the safety of all persons using the highway, nor shall it protect the driver of any such vehicle from the consequences of an arbitrary exercise of such right-of-way.

(b) Violation of this section shall constitute failure to yield the right-of-way. (Code 1950, Section 46-241; 1958, c. 541; 1960, c. 570; 1966, cc. 613, 699; 1968, c. 89).

Purpose of section.--It was to give some leniency to police, fire, and ambulance vehicles that this section and Section 46.1-226 were enacted. Phillips v. United States, 182 F. Supp. 312 (E.D. Va. 1960).

This section apparently grants a right-of-way to an ambulance operating under an emergency run. Phillips v. United States, 182 F. Supp. 312 (E.D. Va. 1960).

46.1-226 POLICE, FIRE-FIGHTING AND RESCUE VEHICLES AND AMBULANCES EXEMPT FROM REGULATIONS IN CERTAIN EMERGENCIES; EXCEPTIONS AND ADDITIONAL REQUIREMENTS.--(a) The operator

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of (1) any police vehicle operated by or under the direction of a police officer in the chase or apprehension of violators of the law or persons charged with or suspected of any such violation, (2) any vehicle used for the purpose of fighting fire, including publicly owned State forest warden vehicles not to exceed two hundred in number, when traveling in response to a fire alarm or emergency call, (3) any vehicle owned by a political subdivision of the Commonwealth for rescue purposes when traveling in response to a fire alarm or an emergency call, or (4) any ambulance or rescue or life-saving vehicle designed or utilized for the principal purposes of supplying resuscitation or emergency relief where human life is endangered, whether such vehicle is publicly owned or operated by a nonprofit corporation or association, when such vehicle is being used in the performance of public services, and when such vehicle is operated under emergency conditions, may, without subjecting himself to criminal prosecution:

(1) Proceed past red signal, light, stop sign or device indicating moving traffic shall stop if the speed and movement of the vehicle is reduced and controlled so that it can pass a signal, light or device with due regard to the safety of persons and property.

(2) Park or stand notwithstanding the provisions of this chapter.

(3) Disregard regulations governing a direction of movement of vehicles turning in specified directions so long as the operator does not endanger life or property.

(4) Pass or overtake, with due regard to the safety of persons and property, another vehicle at any intersection.

(b) These exemptions, hereinbefore granted to such a moving vehicle, shall apply only when the operator of such vehicle displays a flashing, blinking or alternating red light and sounds a siren, exhaust whistle, or air horn designed to give automatically intermittent signals, as may be reasonably necessary, and, only when there is in force and effect for such vehicle standard automobile liability insurance covering injury or death to any person in the sum of at least one hundred thousand dollars because of bodily injury to or death of one person in any one accident and, subject to the limit for one person, to a limit of three hundred thousand dollars because of bodily injury to or death of two or more

persons in any one accident, and to a limit of ten thousand dollars because of injury to or destruction of property of others in any one accident. Such exemptions shall not, however, protect the operator of any such vehicle from criminal prosecution for conduct constituting reckless disregard of the safety of persons and property. Nothing in this section shall be construed to release the operator of any such vehicle from civil liability for failure to use reasonable care in such operation. (Code 1950 (Suppl.) Section 46-241.1; 1954, c. 356; 1956, c. 192; 1958, c. 541; 1966, cc. 350, 699; 1968, c. 89; 1974, c. 365).

The 1974 amendment substituted "one hundred thousand dollars" for "fifty thousand dollars" and "ten thousand dollars" for "five thousand dollars" in the first sentence of subsection (b).

Law Review.--For survey of Virginia law on torts for the year 1971-1972, see 58 Va. L. Rev. 1349 (1972).

Purpose of section.--It was to give some leniency to police, fire and ambulance vehicles that this section and Section 46.1-225 were enacted. Phillips v. United States, 182 F. Supp. 312 (E.D. Va. 1960).

The legislature requires the driver of an authorized emergency vehicle to drive with due regard for the safety of all persons, and the same standard of care must apply regardless of whether the operator sues or is being sued. Smith v. Lamar, 212 Va. 820, 188 S.E.2d 72 (1972).

The proper standard of care required of the driver of an emergency police vehicle is the standard of care of a prudent man in the discharge of official duties of a like nature under like circumstances. Smith v. Lamar, 212 Va. 820, 188 S.E.2d 72 (1972).

The standard of care which would customarily be required of the ordinary motorist does not apply to a police officer operating his vehicle under certain conditions prescribed by law, in hot pursuit of a law violator. Smith v. Lamar, 212 Va. 820, 188 S.E.2d 72 (1972).

As to obedience to traffic lights by drivers of emergency vehicles under former law, see Virginia Transit Co. v. Tidd, 194 Va. 418, 73 S.E.2d 405 (1952); Manhattan For Hire Car Corp. v. O'Connell, 194 Va. 398, 73 S.E.2d 410 (1952).

NOTES/REFERENCES

46.1-250.1 STOPPING VEHICLE OF ANOTHER; BLOCKING ACCESS TO PREMISES; DAMAGING OR THREATENING COMMERCIAL VEHICLE OR OPERATOR THEREOF.--(a) It shall be unlawful for any person: (1) to intentionally and willfully stop the vehicle of another for the sole purpose of impeding its progress on the highways, except in the case of an emergency or mechanical breakdown; (2) to intentionally and willfully block the access to and from any premises of any service facility operated for the purposes of selling fuel for motor vehicles; of performing repair services on motor vehicles; or of furnishing food, rest or any other convenience for the use of persons operating motor vehicles engaged in intrastate and interstate commerce upon the highways of this State; (3) to intentionally and willfully damage any vehicle engaged in commerce upon the highways of this State, or threaten, assault or otherwise harm the person of any operator of such motor vehicle engaged in the operation of such motor vehicle being used for the transportation of property for hire upon the highways of this State.

(b) Any person violating the provisions of this section shall be guilty of a misdemeanor, and in addition, his operator's or chauffeur's license may be revoked by the court for a period not in excess of one year. The court shall forward such license to the Division of Motor Vehicles as provided by law.

(c) The provisions of this section shall not apply to any law-enforcement officer, school guard, fireman or member of a rescue squad, when they are engaged in the performance of their duties or to any vehicle owned or controlled by the Virginia Department of Highways while engaged in the construction, reconstruction or maintenance of highways. (1974, c.457).

46.1-267 OTHER PERMISSIBLE LIGHTS; POLICE AND FIRE-FIGHTING VEHICLES, EMERGENCY VEHICLES, ETC.--Any motor vehicle may be equipped with not to exceed two fog lamps, one passing lamp, one driving lamp, two side lamps of not more than six candlepower; interior light of not more than fifteen candlepower; vacant or destination signs on vehicles operated as public carriers, and signal lamps.

Only those vehicles listed in paragraph (a) of Section 46.1-226 and paragraph (a) of Section 46.1-267 and school buses may be equipped with flashing, blinking or alternating red

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emergency lights of a type approved by the Superintendent.

Vehicles used for the principal purpose of towing or servicing disabled vehicles or in constructing, maintaining and repairing highways or utilities on or along public highways, vehicles used for the principal purpose of removing hazardous or polluting substances from State waters and drainage areas on or along public highways for use only when performing such duties and hi-rail vehicles may be equipped with flashing, blinking or alternating amber warning lights of a type approved by the Superintendent, but such lights on hi-rail vehicles shall be activated only when such vehicles are operated on railroad rails.

(a) A member of any fire department, volunteer fire company or volunteer rescue squad may equip one vehicle owned by him with a flashing or steady-burning red light of a type approved by the Superintendent, for use by him only in answering emergency calls.

Any person violating the provision of this section shall be guilty of a misdemeanor.

(b) Blue lights, steady or flashing, of a type approved by the Superintendent shall be reserved for civil defense vehicles, publicly or privately owned.

No motor vehicle shall be operated on any highway which is equipped with any lighting device other than lamps required or permitted in this article or required or approved by the Superintendent or required by the federal Department of Transportation. (Code 1950, Section 46-273; 1954, c. 310; 1958, c. 541; 1960, cc. 156, 391; 1962, c. 512; 1966, cc. 655, 664; 1968, c. 89; 1972, c. 7; 1974, c. 537).

46.1-267.1 AUXILIARY LAMPS ON FIRE-FIGHTING AND OTHER EMERGENCY VEHICLES.--Any fire vehicle used exclusively for fire fighting, any ambulance or rescue or life-saving vehicle used for the principal purpose of emergency relief or any wrecker used for the principal purpose of towing disabled vehicles may be equipped with clear auxiliary lamps which shall be used exclusively for lighting emergency scenes. Such lamps shall be of a type permitted by the Superintendent, and shall not be used in a manner which will tend to blind or interfere with the vision of the operators of approaching vehicles. In no event shall such lamps be lighted while the vehicle is in motion. (1972, c. 385).

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46.1-285 SIRENS OR EXHAUST WHISTLES UPON EMERGENCY VEHICLES.--Every police vehicle and vehicle used for the purpose of fighting fire and every ambulance or rescue vehicle used for emergency calls shall be equipped with a siren, exhaust whistle or air horn designed to give automatically intermittent signals of a type not prohibited by the Superintendent. Publicly owned vehicles used by a State forest warden, not to exceed two hundred in number in the Commonwealth, may also be so equipped. (Code 1950, Section 46-291; 1958, c. 541; 1960, c. 391; 1966, cc. 655, 664, 699; 1968, c. 89).

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(B) FIRE DEPARTMENT DRIVER SELECTION

Prospective drivers must be screened thoroughly, with emphasis on physical condition and emotional stability, and a physical examination is strongly recommended. Early symptoms of ailments, such as poor eyesight, diabetes, high blood pressure, heart condition, etc., which affect driving can be detected and often remedied. The emotional stability of a driver should be given scrutinizing consideration.

Proficiency in driving an automobile or truck does not automatically qualify one for operating fire department apparatus or vehicles. In fact, it is strongly recommended that completion of a driver training program be a prerequisite to driver selection. Failure to react appropriately while driving under emergency conditions is not easily detected prior to driving in a fire department, but once it becomes evident, the driver should not be permitted to operate the department's motor vehicles.

Once a driver has been accepted, every effort should be made to develop a positive attitude and sense of responsibility. The safety of fellow employees, as well as the general public, is the firefighters' responsibility, and their attitude should be that accidents can and must be prevented, not that accidents are bound to happen.[3]

Driving heavy fire apparatus, loaded with personnel and equipment, through congested traffic leaves no room for error. To qualify for this position, the driver must be thoroughly trained in the skills necessary for emergency driving operations. In addition, drivers must have knowledge of basic mechanical information pertaining to fire apparatus, understand all pertinent traffic regulations, establish good driving habits, develop proper attitudes toward traffic responsibilities, and exercise restraint and good judgment. Modern traffic conditions necessitate that fire apparatus drivers and tillers be skillful, mature, responsible, and physically as well as mentally fit.[4]

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[3] Much of the narrative in this section on driver selection has been taken from the "Directive" of March 28, 1969, issued by Robert F. Hanlon, Chicago Fire Department, pp. 2-3.

[4] Condensed from Driver Training: Fire Department Driver Training Manual of Instruction (Sacramento, California: State Department of Education, 1972), pp. vii, 1.

NOTES/REFERENCES

In order to keep accurate records of a driver's performance on a particular piece of equipment, the Road Test Form (see Exhibit #B-1 on page 4-13) should be used. In addition to the Driver's Certification (see Exhibit #B-2 on page 4-14), this would give rapid and accurate information pertaining to a driver's qualifications on a particular piece of equipment.

In summary, since the operation of a rather unique vehicle under emergency conditions is a significant portion of the firefighter's job, it is essential that the initial qualifications and continued assessments described herein be considered in order to reduce the number of fire-related traffic crashes.

EXHIBIT #B-1

SAMPLE ROAD TEST FORM

Name____________________ Date__________ File #__________

Apparatus____________________ Road Condition__________

Department____________________ Shift__________ Grade__________

THE DRIVER DOES NOT			THE DRIVER DOES		
SPEED			STARTING MOTOR		
4		TOO FAST FOR CONDITIONS	2		DISENGAGE CLUTCH
2		TOO SLOW FOR CONDITIONS	1		CHECK FOR NEUTRAL
2		ERRATICALLY	2		PUT ON PROPER LIGHTS
TURNS			LEAVING CURB OR QUARTERS		
2		FROM WRONG LANE	2		OBSERVE CONDITIONS FRONT & REAR
2		INTO WRONG LANE	1		GIVE PROPER SIGNALS
2		CUT CORNERS	2		WAIT FOR PASSING TRAFFIC
2		TOO WIDE	1		MAKE SMOOTH START
2		TOO FAST	PARKING		
2		WITHOUT SIGNAL			
OVERTAKING AND PASSING			1		GIVE PROPER SIGNAL
			2		PARK TO PREVENT BACKING
4		FOLLOW TOO CLOSELY	1		AVOID STRIKING CURB
2		FAIL TO SIGNAL	1		LEAVE IN GEAR
2		CUT IN TOO SOON	1		SET HAND BRAKE OR BLOCK
3		PASS IN INTERSECTION	SLOWING OR STOPPING		
3		SPEED THROUGH INTERSECTION			
USE OF CONTROLS			2		GIVE PROPER SIGNAL
			2		LOOK IN MIRROR
2		DOUBLE CLUTCH	2		STOP SMOOTHLY
2		DROP TO LOWER GEAR	2		FULL STOP IN PROPER POSITION
2		PUT GEAR IN NEUTRAL--COAST	BACKING		
2		RIDE CLUTCH			
1		MISS OR PUT IN WRONG GEAR	3		ASK FOR GUIDANCE
2		STEER ONE-HANDED	1		REMOVE FOOT FROM CLUTCH
2		RACE OR STALL ENGINE	2		LOOK BEHIND
2		SLIP CLUTCH TO HOLD	2		BACK SLOWLY
1		IN GEAR AT TRAFFIC LIGHT	ATTENTION		
ATTITUDE					
			2		ANTICIPATE HAZARDS
2		INSIST ON RIGHT-OF-WAY	2		PAY ATTENTION TO DRIVING
2		DEPEND ON OTHER DRIVERS	1		LIMIT TALKING
2		FAIL TO YIELD TO PEDESTRIANS	2		OBSERVE SIGNS AND SIGNALS
2		OVER-CONFIDENT	2		REMAIN IN PROPER LANE

Perfect scores are listed for each skill, with a possible total score of 100. Scoring is based on whether the driver avoids the faults listed in column #1 ("THE DRIVER DOES NOT") and how well the driver performs the skills listed in column #2 ("THE DRIVER DOES").

SOURCE: Chicago Fire Department

EXHIBIT #B-2

SAMPLE DRIVER'S CERTIFICATION

Name ______________________________ Date ______________

Department ____

Driver's License # ____________________ Expiration date ________

Physical Examination Date ______________

_____ Pumper Apparatus Driver

_____ Aerial Apparatus Driver

_____ Tiller

_____ Squad Wagon Driver

_____ Rescue Vehicle Driver

_____ Passenger Car Driver

_____ Special Apparatus Driver

REMARKS: ____

____

____

____

Certified by ____
(Instructor)

NOTES/REFERENCES

(C) THE TILLER[5]

Operating a tractor trailer aerial apparatus truck is the joint responsibility of the driver and the tiller. The driver operates the tractor, and the tiller is responsible for lateral control of the trailer.

The tiller's assignment includes straightaway driving, turning, and backing. The tiller must also be qualified as a driver operator of the aerial ladder and tractor in order to more comprehensibly work as a driving team. Being qualified as a tiller first has proven to be valuable to a driver of fire equipment.

Like emergency vehicle operation in general, tillering requires specialized training and considerable practice. When the student is practicing tillering, the instructor should be in a safe position to assume immediate control if necessary, using some form of safety belt. The instructor should also stress the following points:

--Maneuver the direction of the tiller wheels accordingly.

--Maintain proper driver-tiller signaling of some kind.

--Keep the trailer in line with the tractor on straight roadway.

--Bring the trailer back into line as soon as turns are completed.

--Avoid rough and over-tillering.

--Maintain continuous awareness of the trailer overhang when making turns.

In order to ensure safe and efficient operation of the tractor and trailer as a unit, it is essential that the driver and the tiller work together as a team and coordinate their actions. Strict adherence to good driving practices

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[5] Much of this section of the manual has been condensed from Driver Training: Fire Department Driver Training Manual of Instruction (Sacramento, California: State Department of Education, 1972), pp. 33-35.

NOTES/REFERENCES

and observance of traffic laws must be maintained by both.

A system of signals between the driver and the tiller is an absolute necessity, either by horn, buzzer, or audible two-way voice communication. In the absence of, or in addition to, the two-way voice communication, a horn or buzzer signal code should be used as follows:

--one blast: stop immediately

--two blasts: forward

--three blasts: back up.

Tiller control is particularly important in the following circumstances:

- Leaving the station

  --Check position of the trailer wheels for alignment with the tractor.

  --Check the readiness of the crew and security of the ladders and equipment.

  --Secure safety belt.

  --Keep the trailer centered in the station doorway.

  --Avoid making a sudden swing-out that will require a sharp counter swing-in.

- Traveling forward

  --Keep the trailer wheels parallel to the frame of the trailer and in direct line with the tractor.

  --Turn the tiller wheel counter-clockwise to turn the trailer wheels to the left and move the rear of the trailer to the left.

  --Turn the tiller wheel clockwise to move the trailer wheels and the rear of the trailer to the right.

  --Be alert to conditions on the street which would present a hazard to the overhang of the aerial apparatus because of height.

NOTES/REFERENCES

- Negotiating intersections

  --Exercise particular care, being alert to vehicles on each side and to the rear of the apparatus.

  --Anticipate whether additional traffic lane space will be required to make the turn.

  --Start turning away from the corner about the time the front tractor wheels first enter the intersection when it is necessary to move out wide.

  --Judge and maintain proper side clearance to permit safe passage of the rear overhang of the trailer.

- Backing-up

  --Maintain close coordination with the driver and be alert to the firefighters assigned as guides to warn of inadequate clearance.

  --Pay special attention to clearance on both sides and to the rear of the trailer.

  --Guide the trailer wheels to the parking spot and align the wheels with the trailer frame when the apparatus is stopped.

  --Turn tiller wheel to the right for sideways movement of the trailer to the left; turn the wheel to the left for trailer movement to the right.

NOTES/REFERENCE

(D) APPARATUS DRIVING[6]

The following points should be kept in mind relative to the responsibilities of the fire apparatus driver:

- Brake application

  --The degree of brake pedal pressure required varies, depending on whether the vehicle is equipped with hydraulic brakes, vacuum boosters, or airbrakes.

  --Brake pressure needed also varies in relation to the load of the vehicle.

  --Brakes can be saved by utilizing the gears.

  --More pedal pressure is needed as the brakes are first applied than is needed as the vehicle slows to a stop.

  --If steady, prolonged brake pressure is applied, brake linings will heat and become less effective; on the other hand, if slow pumping action is used, a vehicle with air brakes will soon use its air reserve and "lose" its brakes.

  --Motor compression can be used to help the brakes slow the vehicle when stopping.

- Downhill driving

  --When going downgrade, "gear down" low enough to permit the engine speed to be in the medium range and still hold the vehicle at a safe, steady speed.

  --If in the proper gear, the vehicle will slow when the driver eases off the throttle, and will gain speed with more throttle.

  --Utilize the gears and engine to help hold or slow the speed in order to save the brakes.

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[6] This section has been condensed from Driver Training: Fire Department Driver Training Manual of Instruction (Sacramento, California: State Department of Education, 1972), pp. 25-28.

NOTES/REFERENCES

--The proper gear should be selected and the shift made before starting down the grade.

- Steering control

--For straightaway driving, hands should be placed at the nine and three o'clock position.

--If the road curves to the right, hold the wheel firmly with the right hand and slide the left hand down to the eight o'clock position, then hold the wheel firmly with the left hand and slide the right hand up to the twelve o'clock position; as the curve is entered, the hands will move clockwise and approach the nine and three o'clock position.

--To eliminate the danger of spraining a thumb when the wheel suddenly slips, the hands should be placed on the wheel with the thumbs resting on the wheel or forefinger--not around the wheel.

- Shifting before a turn (manual transmission)

--Always shift before a turn so that both hands will be at the wheel throughout the maneuver.

--When turning a corner, know approximately where the rear wheels are located in relation to the rear of the truck.

--Plan on, and do not hesitate to use, both lanes when turning.

--When a change of direction is required after a complete stop, the wheel should be turned just before the stop is completed so that it is ready to turn in the desired direction the instant motion is resumed. (This also applies to forward stopping before backing or to a backing stop before forward movement).

- Steering during back-up

--Note the location of the wheels in relation to the ends of the vehicle before backing.

--To change direction when backing, the front end must

NOTES/REFERENCES

swing to the side in order to point the rear of the vehicle toward its goal.

--The sharper the turn, the more the front end must swing.

--Remember to sound the horn or activate backing warning device in addition to using guides in all backing maneuvers.

(E) RESPONDING TO THE CALL

In responding to a fire alarm, personnel must always be prepared for the unexpected, making allowances for the lack of skill and knowledge on the part of other drivers and the unpredictable actions of drivers and pedestrians.

Speed is not of primary importance when responding to alarms. Speed can result in unnecessary accidents, which not only prevent fire equipment from reaching the scene, but may cause death or injury as well. Moreover, the psychological impact of speed must be taken into account, for the natural result of speeding to a fire is inducement to abandon logical judgment when the fire is reached. Speed in reaching the scene, entering the structure, and discharging hose streams has often caused needless physical and property damage. If the excitement encouraged by dangerous speed is lacking, firefighters will be in a state of mind more conducive to proper control of the fire.

Safe, prudent speed varies with such factors as driver reaction time, driver condition, brake efficiency, condition of roadway, weather, and traffic congestion. Speed should be adjusted to existing conditions, not the maximum allowable by law. Speed should be reduced at intersections, and all traffic laws should be obeyed upon return from any call or when responding to a non-emergency situation.

Response routes of travel should be predetermined by a comprehensive pre-fire plan, and drivers must follow these routes as closely as possible, always being alert for the approach of other emergency vehicles. Normally, all fire department vehicles responding from a multiple-company

NOTES/REFERENCES

station should take the same route to an alarm. If more than one vehicle is using the same street, they should proceed in single file, and no vehicle should pass another unless the latter is disabled.

When approaching an intersection, the passenger seat occupant may use the radio to inform other emergency vehicles of their approach. Some type of audible warning device must be sounded to warn of the apparatus' approach at intersections and in heavily populated areas. Particular caution should be exercised during periods when car windows are likely to be rolled up, making it very difficult to hear the approach of an emergency vehicle.

Whenever fire department apparatus is confronted with a stop sign, red light, or yield sign, the vehicle must be slowed, and stopped if necessary, until all drivers and pedestrians on the right-of-way stop to let the vehicle proceed through the intersection. If opposing traffic does not yield to the siren and red light, the right-of-way must not be taken arbitrarily.

Red lights and headlights must be kept lighted at all times (day or night) while responding to emergency calls. When returning to the station or under non-emergency conditions, it is recommended that only the headlights be left on. All vehicles double-parked on the street should have only front and rear red lights and directional signals turned on.

(F) DEPARTMENTAL POLICY

In order to promote safe and efficient response to and return from fire alarms, formulation of departmental policies in several areas is essential, particularly if the agency has been experiencing difficulties in terms of clarifying certain responsibilities. As have been discussed in more detail in the previous sections of this manual, areas which should be considered for policy statements are:

--Selection of driver and tiller.

--Speed in traveling to fire alarms.

--Routes to be followed (and alternatives).

NOTES/REFERENCES

- --Travel through controlled intersections against the traffic control device.
- --Use of audible and visual emergency equipment.
- --Vehicles driving in the same direction.
- --Use of one-way streets.
- --Driving in the opposite lane.
- --Backing-up.
- --Procedure following an accident.

Each of these topics has been discussed previously, and if no policy regarding them is currently in use, it is recommended that those presented herein be seriously considered for implementation by the agencies represented by the student body. The main feature to keep in mind is that policies are merely guidelines, designed to structure, not replace, individual discretion. As such, policy determinations can never hope to cover every conceivable application, but they can offer a framework for action to assist the fire-fighter in making instantaneous, on-the-spot decisions which will not be regretted in retrospect.

(G) RESPONSIBILITIES TO THE PUBLIC

Although fire apparatus may have the right-of-way afforded by law governing the operation of emergency vehicles, this does not give the driver the option to use such privileges arbitrarily. Caution must always be exercised, despite the fact that the red light and siren may legally provide right-of-way, particularly where the indiscriminate use of emergency privileges may endanger life or property.

Drivers of fire equipment should make every effort to develop a courteous, responsible driving manner. Since it is the vehicle driver with whom the motoring public most often comes into contact, a courteous behind-the-wheel demeanor on the part of the operator can contribute significantly to enhancing public opinion of the fire service.

NOTES/REFERENCES

The important thing to remember in terms of responsibility is that the fire department driver must be as responsible to the motorist or pedestrian past whom the vehicle travels as to the persons or property the operator seeks to reach. Without recognition of this dual responsibility, personal injury, property damage, and legal liability can result without ever having reached the site of the alarm.

(H) SKILL DEVELOPMENT--VEHICLE OPERATION

This section of the manual is designed to be used on the driving range, with instructors first demonstrating proper execution of the maneuvers, and then testing the students' ability to perform them. The most important item to keep in mind throughout the on-range portion of the training is safety. This cannot be stressed too much or repeated too often.

Learning the skill of driving an emergency vehicle is very similar to learning the skill of riding a bicycle. The first time a person sits on a bike seat, he does not immediately begin to ride. It takes time to develop balance, to learn capabilities and limitations of the bike, and become confident. If one wants to advance from recreational bike-riding to professional cycling and racing, new, more sophisticated skills must be learned and practiced. So it is with driving fire apparatus. Most students can drive a motor vehicle, but now they must learn new skills and develop new attitudes to assist them in becoming more proficient in the driving task as it applies to operation of this type of emergency vehicle.

There is a distinct difference between reaction under normal driving conditions and reaction with a siren operating overhead, emergency lights flashing, and two-way radio conversation on-going. With high levels of adrenalin being pumped through the driver's system, it is easy to get caught-up in the excitement of the emergency run.

The driver must learn to operate fire apparatus safely under the full impact of these tense conditions, maintaining personal control over emergency conditions in all situations at all times. The experiences provided during this portion of the training will assist in accomplishing this difficult task.

NOTES/REFERENCES

(1) Student Assignments and Criteria for Evaluation

The most effective instructor/student ratio for this type of course is one instructor for every two students. This allows the instructors to become familiar with each student's driving capabilities and personal driving problems. As the instructor is assisting the one student behind the wheel, the other one is in the vehicle observing. Riding as an observer is important in order to enable the student to become familiar with the course and also to assist the driver if required.

The physical layout of the course should be such that at least three groups can be using a particular area of the range without interfering with each other.

A sample evaluation form is included in the Appendix of this manual. This should be explained to students prior to beginning the behind-the-wheel phase of the program (preferably during the review of skill exercises to be discussed). The evaluation form will be essential to determining the progress of each individual student and will also be helpful in pointing out areas wherein each person is weak.

(2) Review of Pre-driving Habits

If safe driving is to be accomplished under normal situations, and especially under emergency conditions, the driver must be comfortable and securely seated and must be familiar with the vehicle's interior and instrument locations.

The driver of any emergency vehicle should be so familiar with the interior switches and instrument panel that only one quick glance at the desired switch or dial can provide the necessary visual input to maneuver a switch or receive the required data from a gauge. Emergency driving situations are neither the time nor the place to be learning the vehicle's interior instrument panel. This knowledge must be committed to memory prior to any actual driving.

NOTES/REFERENCES

During the upcoming on-range exercises, the following safety measures should be adhered to:

--Operate emergency flashers at any time that the vehicle is stopped on the driving range.

--Apply the emergency brake prior to leaving the driver's seat.

--Close the driver's door at any time that the operator is out of the vehicle.

--Precede any backing maneuver with the sound of the horn.

--Implement strict radio procedures for any use of the radio, and at the completion of any and all transmissions, secure the hand microphone in its proper position.

--Use seat belts whenever the vehicle is in operation.

--Make all mirror adjustments prior to starting the vehicle.

In addition to these general safety measures, the operation of fire equipment requires further precautions with regard to attire, equipment, and conduct:

- Turnout gear for drivers and tillers

  --Use of the helmet should be mandatory.

  --Boots should not be worn by drivers, but are permissible for tillers.

  --Coats should be optional for drivers, depending on the season and type of cab (closed or open).

  --Gloves should be optional for drivers and tillers, depending on the season and closed or open cab.

- Safety equipment

  --Seat belts and shoulder straps should be compulsory for drivers, tillers, and jump seats.

NOTES/REFERENCES

--Safety belts should be mandatory for tailboard riders.

--Safety belts or safety rigs of some kind should be compulsory for tiller instructors.

--Non-skid snow grip tires should be used in winter only. (Care should be taken in selection, since chains will skid on ice, and some types of snow grip tires for apparatus will skid on wet pavements).

--Windshield wipers should be available on both sides, front and back, for open cab apparatus.

- Conduct

--The mounting of self-contained mask in jump seats on apparatus should be prohibited where a portion of the seat itself is occupied.

--Standing up in front of jump seats in response should be prohibited.

--The number of personnel riding the tailboard on pumper companies should not exceed three (3) firefighters.

--The number of personnel riding in the cab should be limited to three (3), if so designed to accommodate same; if not, only two (2).

(3) Instructor Demonstrations

Prior to the students performing driving exercises, each instructor will conduct assigned students through each exercise, explaining vehicle position and correct procedures for execution of the exercise. Demonstrations should be models of expert performance, carried out at slow speeds, and accompanied by comments pointing out the critical elements of performance. Demonstrations of complex maneuvers and techniques should be simplified, emphasizing only the most critical aspects of performance.

NOTES/REFERENCES

(4) Behind-the-wheel Exercises and Observation

Realizing that physical facilities will vary, it is highly recommended that the physical layout of the course be designed to enable at least three groups to be performing different driving exercises simultaneously. When this is possible, the structure of the exercises should be such that a rotation of groups from one exercise to the next is simple and systematic. In the event that this is not possible, or practical, the instructor must make whatever adjustments are necessary to permit the exercise to continue without any loss of integrity. In effect, if an exercise cannot be conducted properly and with minimal risk, it should be discontinued until the circumstances are improved.

Prior to the students performing driving exercises, each instructor will conduct assigned students through each exercise, explaining vehicle position and correct procedures for execution of the exercise.

In consideration of the limited amount of time for in-car instruction, it is suggested that the range instruction be organized so that maximum time is provided for student practice. Also, valuable range time should not be consumed by covering material that can be dealt with effectively in the classroom, as homework, or during observation time.

In addition, the following instruction guides should be kpet in mind, in view of the problem of teaching in an inherently dangerous environment:

- Never expose students to unreasonable risk of harm.
- Be alert to the emotional strain that can affect the performance of both students and instructors.
- Make an effort to identify students who approach the driving task with considerable fear and anxiety, treating them accordingly.
- Keep records of the driving performance of each student during each practice period.
- Conduct occasional individual student/instructor conferences to discuss the student's performance and plan for improvement.

NOTES/REFERENCES

- Use independent study assignments.
- Select teaching methods that are most appropriate for the specific content being discussed.
- Be prepared to adjust the amount of practice time spent on each skill to suit the individual learning capacities of each student.
- Provide the student with sufficient practice on each skill to enable correct performance on several successive trials.
- Periodically check to determine whether skills learned earlier have been retained, and when necessary, provide additional practice.
- Require the student to practice fundamental skills until they are mastered well enough to permit efficient progress to more advanced skills.
- Avoid continuous and repetitive practice of the same skill in order to avoid the loss of student motivation.
- In planning for the practice of most driving skills, provide for initial mass practice, followed by subsequent distributed practice.
- Develop and practice a clear, concise technique for giving directions.
- Give directions well in advance to permit the student to get mentally and physically ready to perform.
- At appropriate times, provide students with the opportunity to direct their own driving.
- Verbal cues should be provided only when necessary to help the student perform correctly.
- Be ready to use verbal cues during the student's initial performance of complex skills, when a student tends to repeat a specific error, in difficult traffic situations, and in other comparable circumstances.

NOTES/REFERENCES

- Recognize that the need for verbal cues diminishes as the student's driving proficiency increases.
- Be in a position to observe all important elements of student performance, including those not reflected in the movement of the vehicle.
- Thoroughly analyze all aspects of the student's performance to determine the underlying cause of improper performance.
- Clearly identify errors of which the student is unaware.
- In most cases, verbal feedback should be immediate and precise.
- Limit the amount of feedback in terms of the student's capabilities for using it.
- Indicate the appropriate corrective action as part of the feedback process.
- Provide an immediate opportunity to correct errors by performing the skill again.
- Whenever appropriate, verbally reinforce corrected performance.
- Develop special methods designed to cope with special problems.
- Assess the student's progress in relation to the objectives and content of the course.
- Use the test to determine strengths and weaknesses and plan further improvement.
- Take all possible precautions to ensure the objectivity of the test.
- Group students homogeneously for in-car instruction.
- Use a variety of techniques to enhance the value of student observation time.

NOTES/REFERENCES

(5) Commentary Driving

The purpose of emergency vehicle operator's training is to teach new principles and correct any inappropriate driving habits which the student may have. When placed in the controlled situation of a driving school, people will temporarily change habits to conform with the expectations of the instructor. However, commentary driving is an exercise in which both the positive and negative aspects of a person's driving surface.

This portion of the training program is conducted on the open road in a nearby locality. Each instructor will demonstrate to the students the method in which the exercise is to be performed. It will be explained that each student will drive exactly as if he were alone. The exercise requires the driver to verbalize all that is seen and all actions performed.

Each student will drive for approximately 15-20 minutes with the instructor in the passenger seat. The instructor will mention the driving time and will take notes, but this should not distract the student. Notes are taken on both positive and negative driving habits and are recorded for the student's personal evaluation.

A typical narrative during commentary driving might be as follows: "I am placing my hand on the door handle; I am opening the door; I am sitting down now to adjust the seat, the mirror, buckle seat belts. I place the key in the ignition, start the vehicle, release the emergency brake, place in gear. I am turning my head to the rear to check for any vehicle; turn again to the front; I am rechecking the rear by mirror; I place turn signal on; accelerate into lane of travel. I see a red car approaching; I am passing a 'speed 45 mph' sign. . ."

This exercise and verbalization, while perhaps appearing trivial, actually assist the instructor in knowing what the student is perceiving as the driving task progresses. The student will often omit very important situations which should have been observed or will perform some habit which is annoying or disturbing to other drivers, such as forgetting to signal or omitting use of the mirror.

This portion of the training should not be eliminated,

NOTES/REFERENCES

as the instructor must be aware of any inappropriate driving habits in order to correct them as the training proceeds.

(6) Review of Skill Exercises

Prior to physically operating a vehicle on the driving range, the student should be familiarized verbally and through instructor demonstrations with each meneuver contained in the following three areas of skill development:

--Phase I, Defensive Driving
--Phase II, Specialized Maneuvers
--Phase III, Emergency Vehicle Operation.

NOTES/REFEREN

(a) Phase I, Defensive Driving

This type of driving creates for the vehicle operator a condition of maximized safety. The various aspects of defensive driving instruction discussed herein will assist the student in refining those skills necessary to operate a vehicle under normal, non-emergency circumstances.

All of the defensive driving skills described throughout this section have two major objectives:

--To present similar situations which will be encountered in normal, everyday driving and to provide the opportunity to practice solutions to those situations on a driving range before they are actually encountered on the road.

--To prepare for the Specialized Maneuvers and Emergency Vehicle Operation segments of the skill development phase of EVOC training.

In addition to the skills learned, the added pressure of the exercises being timed and penalties for cones being dislodged increase tension. This pressure and tension are in preparation for the pressures and tensions experienced during the pursuit and emergency runs which will be made in Phases II and III of the program and in real life on the job.

NOTES/REFERENCES

- OFFSET ALLEY (See Exhibit #B-3)

Since fire department personnel must often drive in very restricted circumstances, they must be able to maneuver a vehicle into and out of those situations. This exercise will provide practical experience in the development of such skills.

The driver will be required to enter a lane in a forward motion, proceed through the lane and come to a stop in a specified number of seconds, (depending on apparatus used). Upon signal, the driver will back out of the lane to the starting point in the required time, remembering to use appropriate backing warning device in all backing maneuvers.

When the student performs this exercise, some common problems which the instructor should be alert to during forward motion include:

--Improper approach position.

--Improper position through alley.

--Improper position at end of forward movement.

During reverse motion, common student problems include:

--Improper position through alley.

--Remembering that when in reverse, the front turning wheels will swing wide on corners.

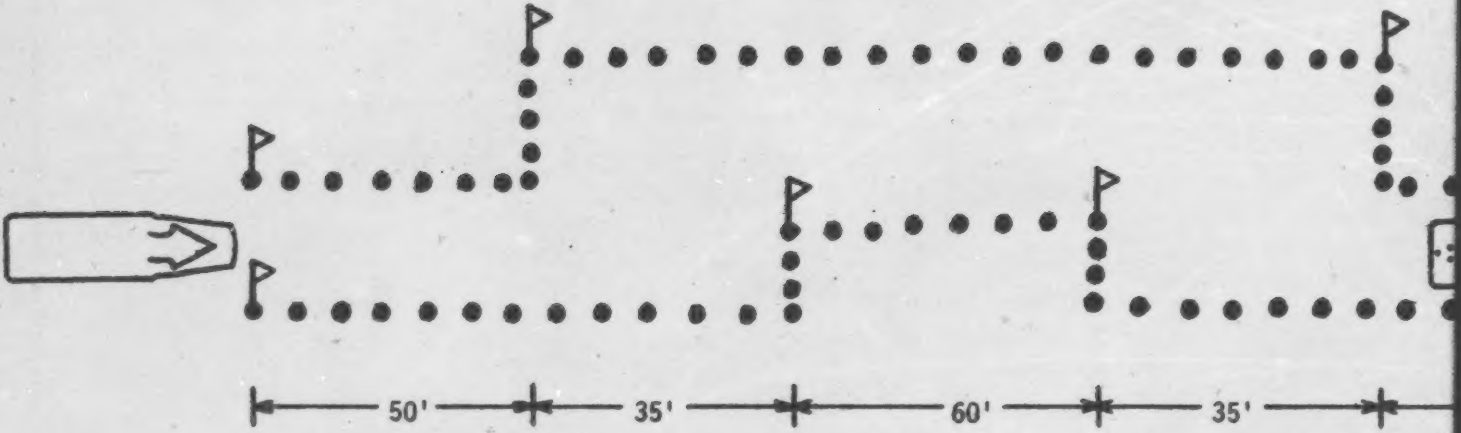
--Failure to use mirrors.

--Forgetting which way to turn steering wheel when using mirrors.

The student is graded on steering control (number of cones hit), throttle control, time, and smoothness.

EXHIBIT #B-3

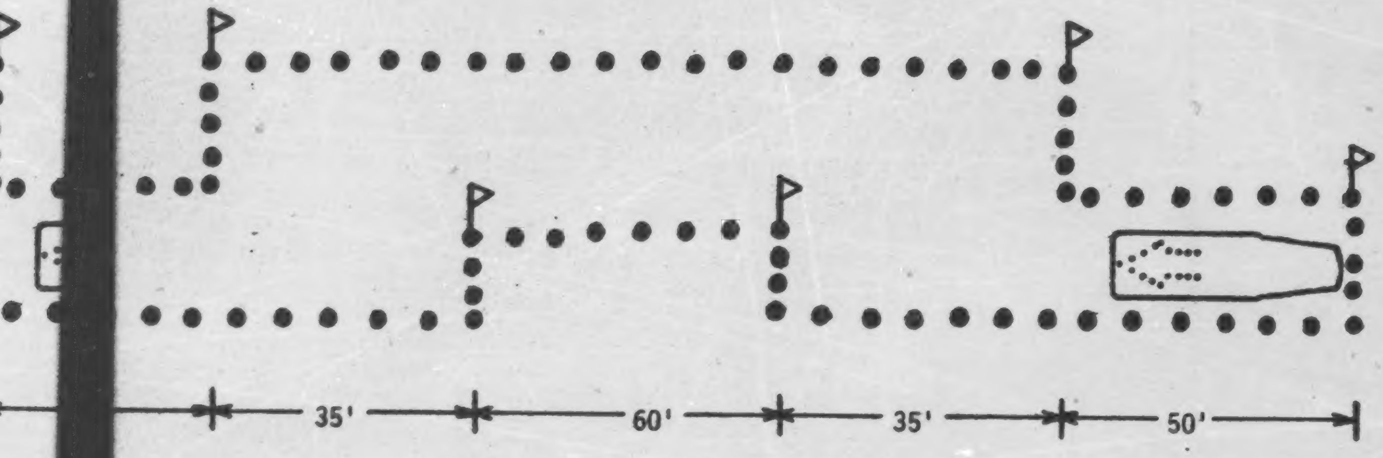
OFFSET ALLEY



Lane width: Vehicle plus four feet

EXHIBIT #B-3

OFFSET ALLEY



Lane width: Vehicle plus four feet

NOTES/REFERENCES

- TURN-AROUND MANEUVER (See Exhibit #B-4)

Often in the excitement of the circumstances, the caller may give incorrect or limited information concerning the location of a fire, and the equipment will respond to a wrong address. In such cases, the apparatus may have to be turned around in very unusual places. Skills developed through this exercise will enable the driver to meet that demand.

This exercise must be completed within a specified time limit. Time begins when the driver touches the closed vehicle door handle. Begin from outside the vehicle and continue in the following manner:

--Enter vehicle, attach seat belt, release emergency brake, place gear shift in "drive" position, and proceed to driveway #1 on the left side at the far end of the exercise.

--Enter driveway #1 nose first, and back out, remembering to use appropriate backing warning device.

--Proceed to a position such that entrance to driveway #2 at the near end of the course can be made in a backing exercise, remembering to use the horn.

--Leave driveway #2 to a position near driveway #1 such that it can be entered in a backing maneuver.

--Upon completion of backward motion into driveway #1, exit the driveway and proceed to the starting point of the course for completion of the exercise.

When the student performs this exercise, some common problems which the instructor should be alert to include:

--Improper position for entrance into the driveway for forward and in reverse maneuvers.

--Over-steering or under-steering upon driveway entrance.

NOTES/REFERENCES

--Driving too deeply into driveway

--Poor judgment in determining where the vehicle is in relation to the cones.

--Riding the clutch.

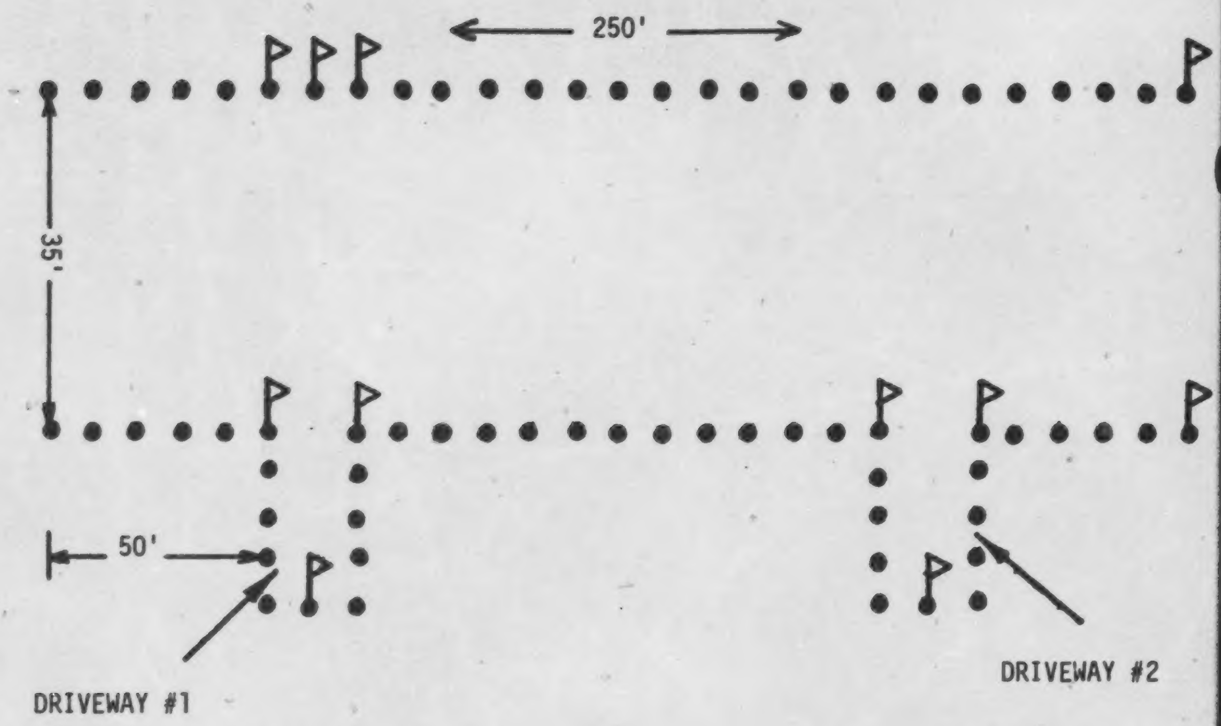
--Improper position of rear of truck.

--Inadequate judgments for right side of vehicle.

The student will be scored on time, number of cones hit (with a penalty of two seconds for each cone), smoothness, steering forward, steering in reverse, use of brakes, and clutch usage.

EXHIBIT #B-4

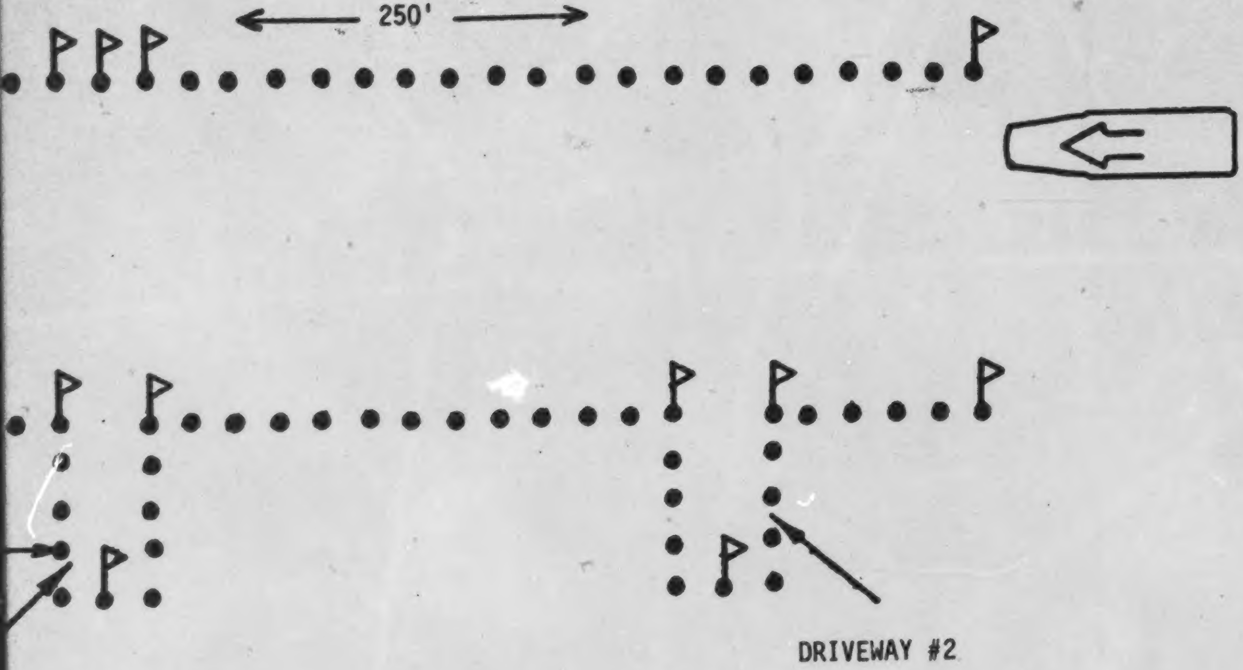
TURN-AROUND MANEUVER


250'
35'
50'
DRIVEWAY #1
DRIVEWAY #2

Driveway dimensions: Width = vehicle plus four feet
Length = twenty-five feet

EXHIBIT #B-4

TURN-AROUND MANEUVER


250'
DRIVEWAY #2

Driveway dimensions: Width = vehicle plus four feet
Length = twenty-five feet

NOTES/REFERENCES

- PARALLEL PARKING (See Exhibit #B-5)

This exercise is similar to parking which might be encountered when making a hydrant or drafting hook-up, and is therefore essential for the driver to master. The student must learn to parallel park on both the right and the left side of the road, accomplishing both within the allotted time without knocking over any cones.

Time for this exercise starts when beginning backward motion to park on the right side. The vehicle shall come within eighteen (18) inches of the curb (simulated by cinder blocks if necessary). Entrance and proper position are essential. The vehicle should not be pulled forward, and when parallel parked, the front tires should always be turned to the left for immediate departure.

Upon completion of the right-side parallel parking, the driver will proceed down the course to the left side parallel parking and execute a similar maneuver. When the parking maneuver is completed, the driver will exit the parking stall and cross the finish line for completion of the exercise.

When the student performs this exercise, some common problems which the instructor should watch for include:

--Not knowing when to begin turning movement for entrance into parking stall.

--Not knowing when to counter-steer, once entrance into parking stall has begun.

--Improper distance from curb (must be within 18 inches).

--Improper position of rear of truck.

--Failure to use mirrors.

--Improper distance from rear of truck to barrier.

Scoring will be based on time, steering control, throttle control, curb position, and nearness

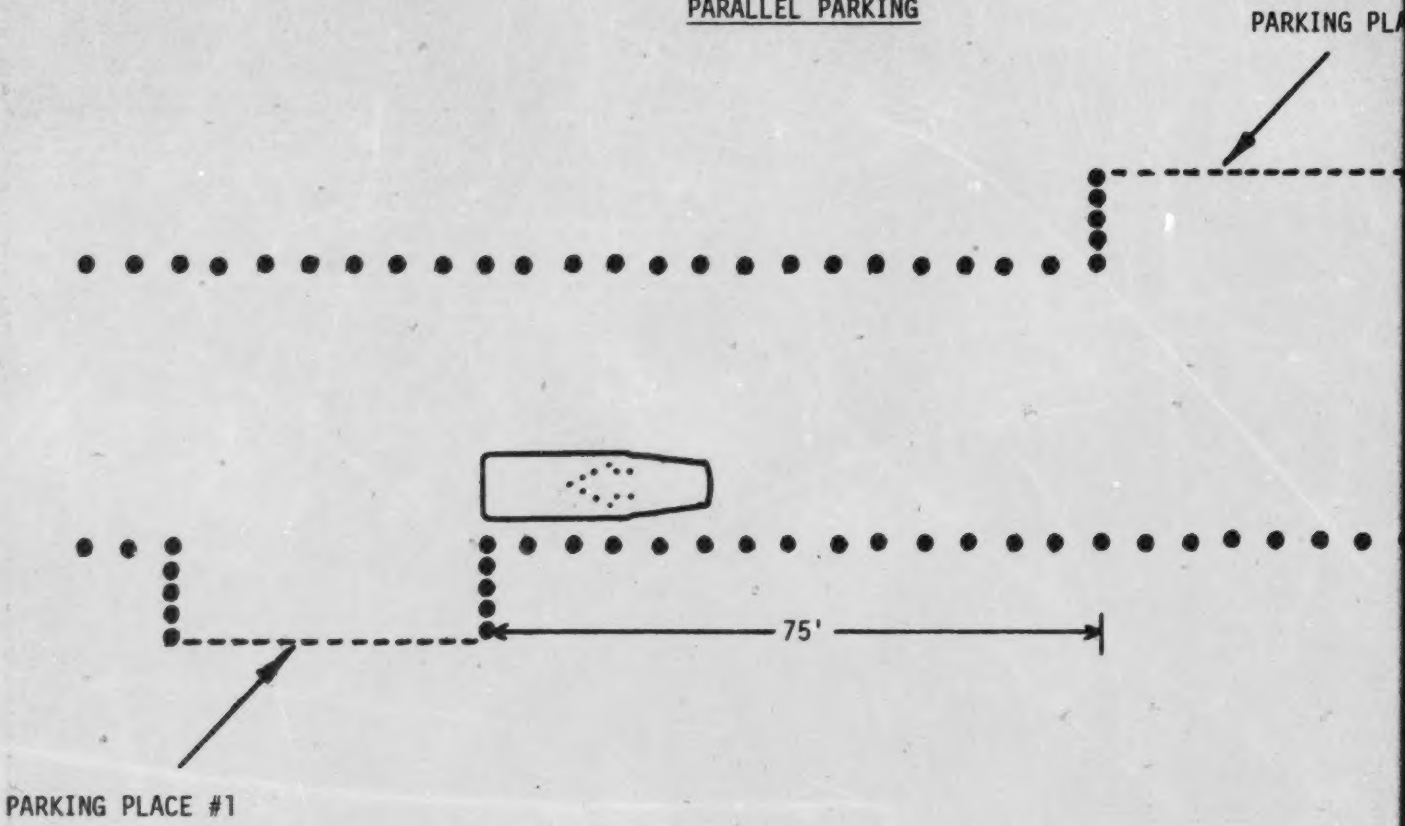
NOTES/REFERENCES

to rear barriers. Distances are scored on the following scale:

0 - 6 inches = 50 points
6 - 9 inches = 45 points
9 -12 inches = 40 points
12 -15 inches = 35 points
15 -18 inches = 30 points
over 18 inches = 0

EXHIBIT #B-5

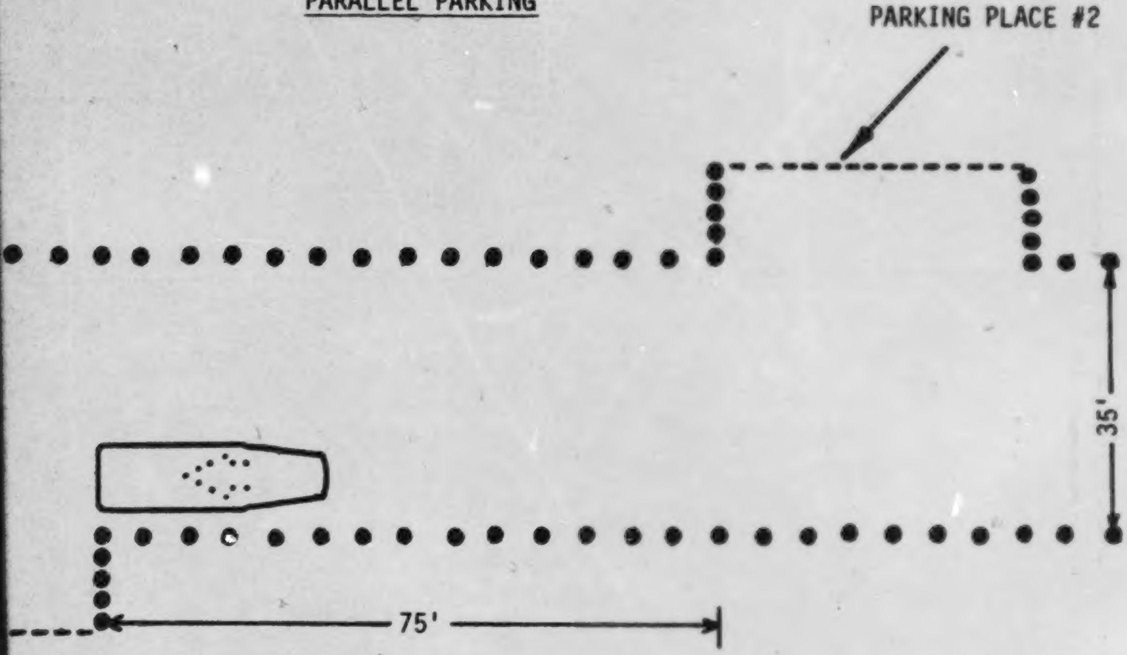
PARALLEL PARKING


PARKING PLA
75'
PARKING PLACE #1

Parking place: Width = ten feet
Length = vehicle plus eight feet

EXHIBIT #B-5

PARALLEL PARKING


PARKING PLACE #2
35'
75'

Parking place: Width = ten feet
Length = vehicle plus eight feet

NOTES/REFERENCES

- DOUBLE LANE CHANGE (See Exhibit #B-6)

As will be further demonstrated in the section of this manual dealing with the Emergency Vehicle Operation phase of EVOC training, proper lane-changing is an essential component. A change of lane to avoid a hazard can be executed more rapidly and safely than an emergency stop.

Approaching the exercise at 25 mph, the operator will successfully negotiate the change of lane without dislodging any cones or slowing speed. Radar will be in operation to ensure that a speed of 25 mph is maintained throughout the exercise. Upon the exit of the last lane, the driver will turn around and approach from the opposite direction (entering where exited), and maneuver through the course again, maintaining a constant 25 mph speed.

When the student performs this exercise, some common problems which the instructor should watch for include:

--Improper position of vehicle in relation to cones.

--Tendency to over-steer or under-steer.

--Improper hand position.

--Improper use of brakes.

--Slowing of vehicle without use of brakes.

--Failure to use mirrors.

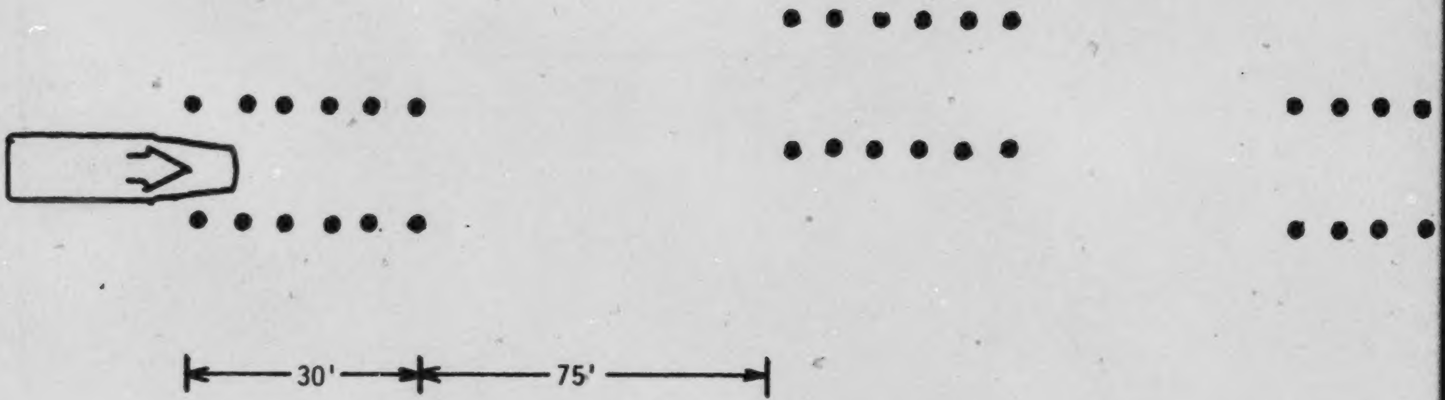
--Improper position of rear wheels.

Grading is based on smoothness, throttle control (use of brakes), and steering control. The driver will be penalized for cones dislodged according to the following formula:

0 cones -	100 points
1 cone -	90 points
2 cones -	80 points
3 cones -	70 points
4 cones -	fail

EXHIBIT #B-6

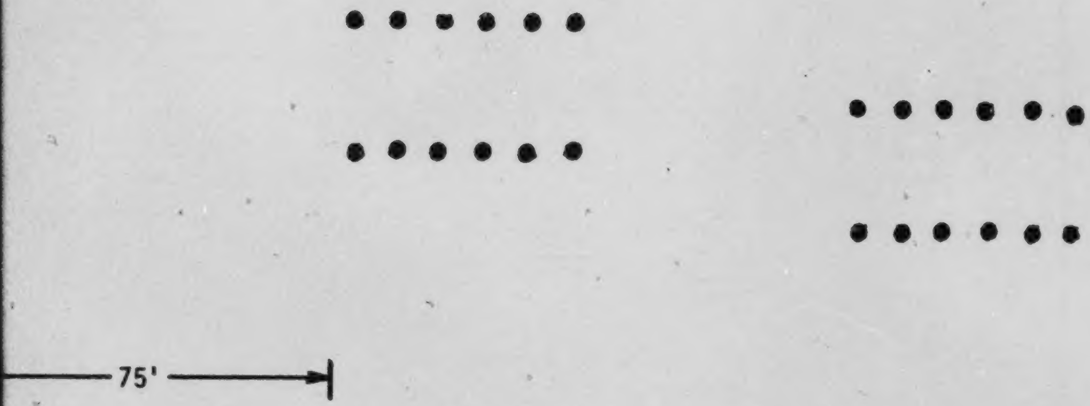
DOUBLE LANE CHANGE



Lane width: Vehicle plus four feet

EXHIBIT #B-6

DOUBLE LANE CHANGE



Lane width: Vehicle plus four feet

NOTES/REFERENCES

- CONE JUDGMENT COURSE (See Exhibits #B-7, B-7-1, B-7-2)

This series of maneuvers is utilized in order to better develop proper judgment and more precise steering skills.

The course consists of a light bulb turn and a backing exercise. (This is also a timed course, but will be customized to the specific location on which the skill development phase is to be housed, depending upon the specific conditions which exist at the location).

The light bulb will be entered by the vehicle at a speed comfortable to the driver. As the vehicle progresses around the circle, the distance between the cones will diminish, requiring increasing concentration on the part of the driver. Exiting the light bulb, the driver will proceed to the driveway and, remembering to sound appropriate backing warning device, will back into the coned area. Exiting the driveway, the driver will proceed again through the light bulb. Time will cease when the vehicle passes the start/finish line.

When the student performs this exercise, some common problems which the instructor should watch for include:

--Excessive speed.

--Improper vehicle position.

--Improper turning movement.

--Failure to use mirrors.

--Improper position of right side of truck.

--Failure to allow for length of truck.

--Improper position of rear wheels.

--Early/late turning (during backing exercise).

--Improper position of rear of truck in relation to distance to barrier (backing exercise).

NOTES/REFERENCES

The cone judgment course is graded on smoothness, throttle control, steering control, nearness to rear barrier, and time. Cones dislodged from position will be counted according to the following:

0 cones = 100 points
1 - 2 cones = 95 points
3 - 5 cones = 90 points
6 - 8 cones = 85 points
9 - 11 cones = 80 points
12 - 14 cones = 75 points
15 - 17 cones = 70 points
18 cones = fail

Distance from the rear barrier is scored as follows:

0 - 6 inches = 50 points
6 - 9 inches = 45 points
9 - 12 inches = 40 points
12 - 15 inches = 35 points
15 - 18 inches = 30 points
over 18 inches = 0

EXHIBIT #B-7

CONE JUDGMENT COURSE

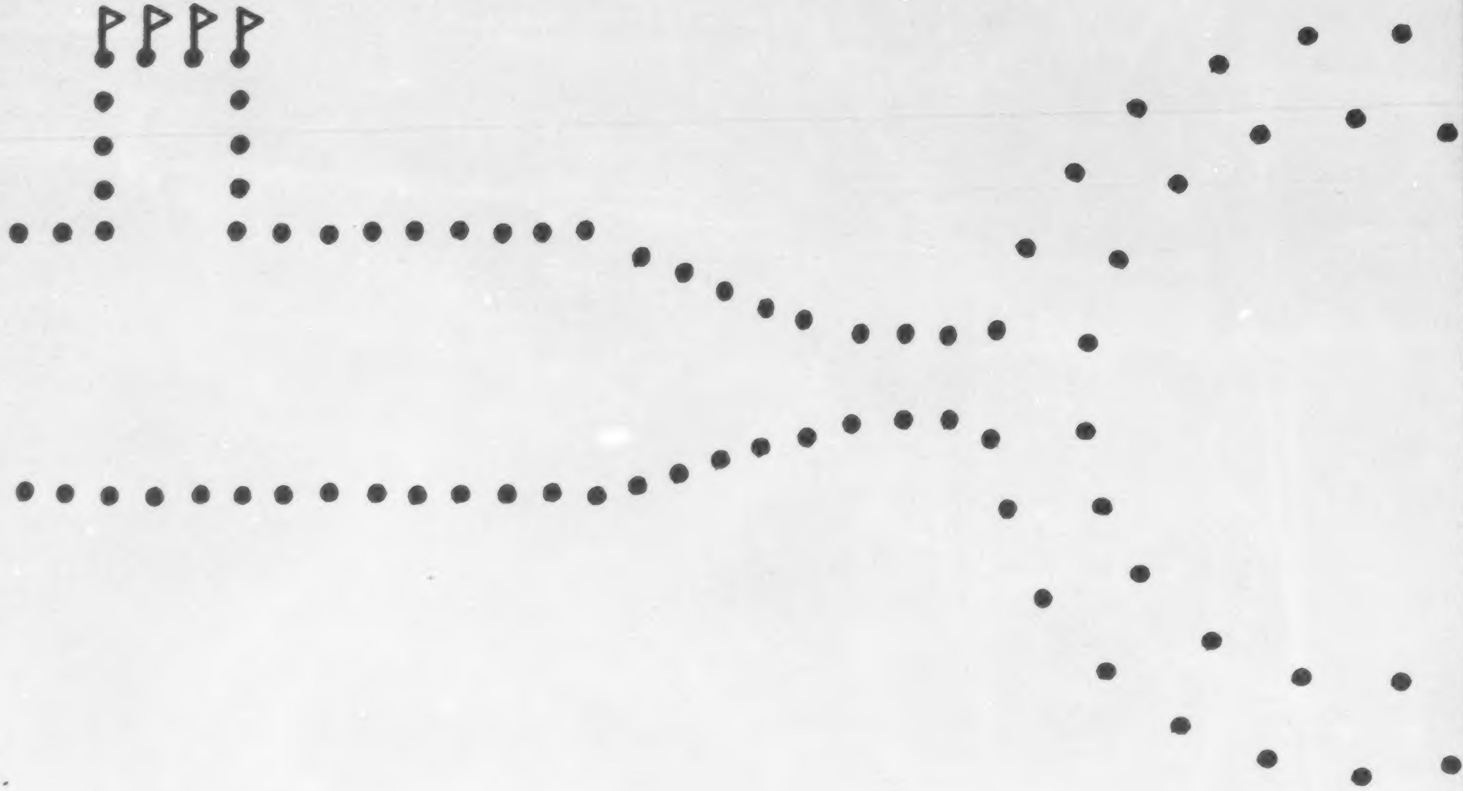


EXHIBIT #B-7

CONE JUDGMENT COURSE

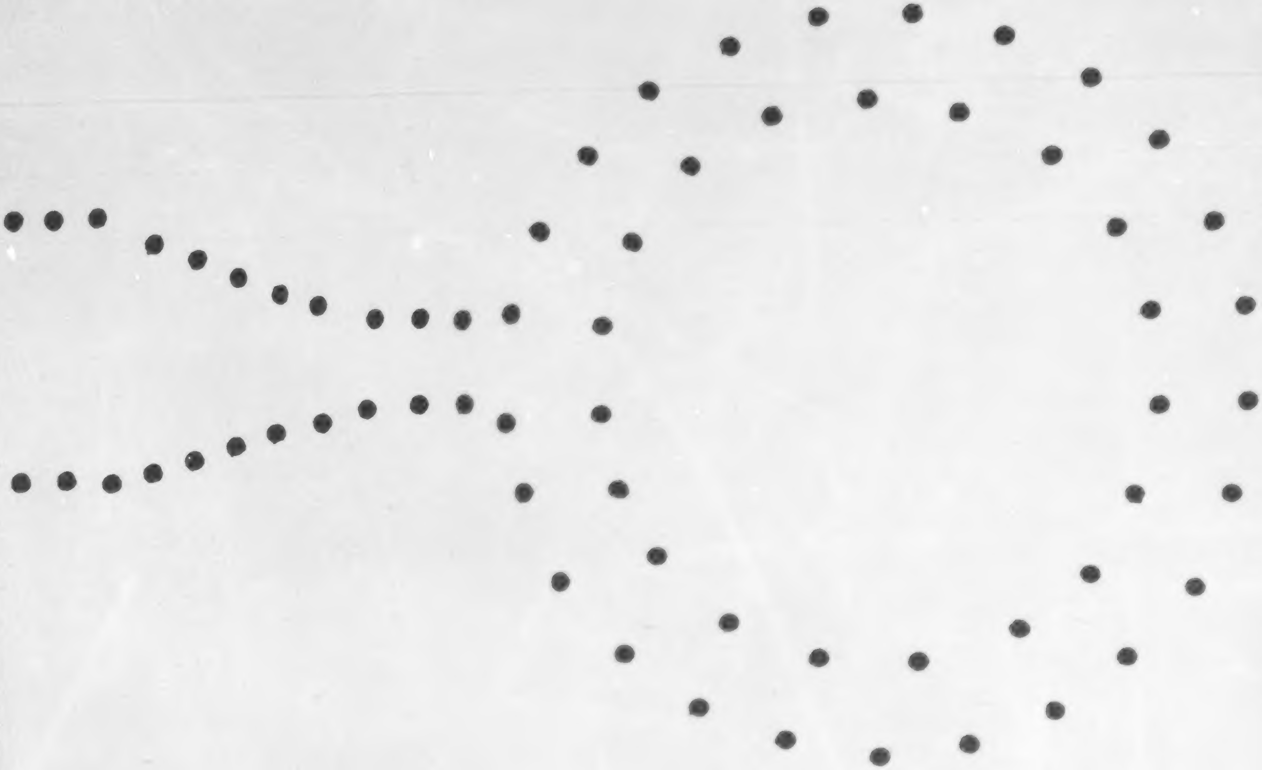
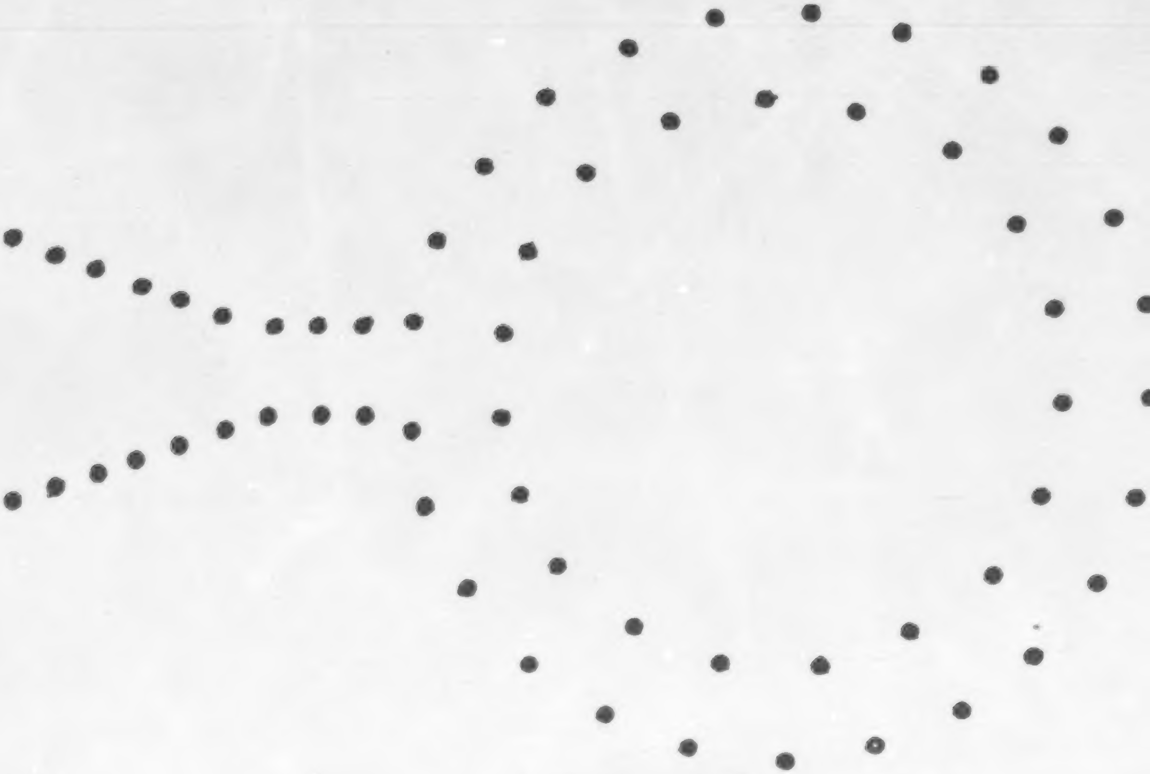


EXHIBIT #B-7-1

LIGHT BULB

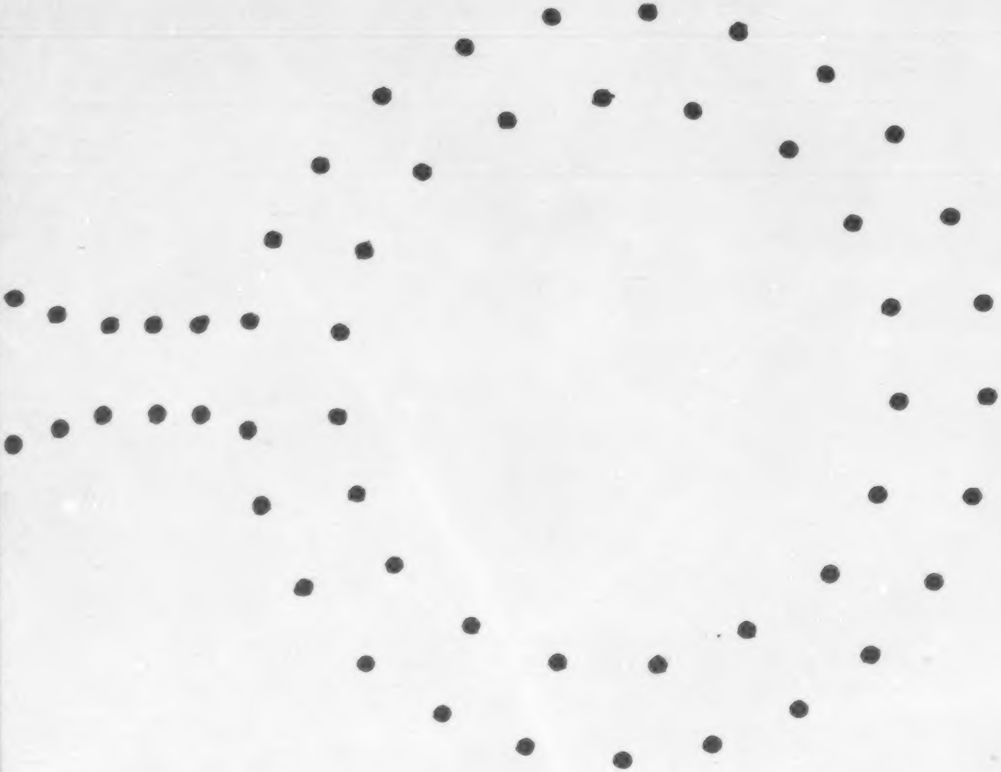


Enter circle to right; cones diminish in width near exit.

Turning radius of test vehicle is radius of circle.

EXHIBIT #B-7-1

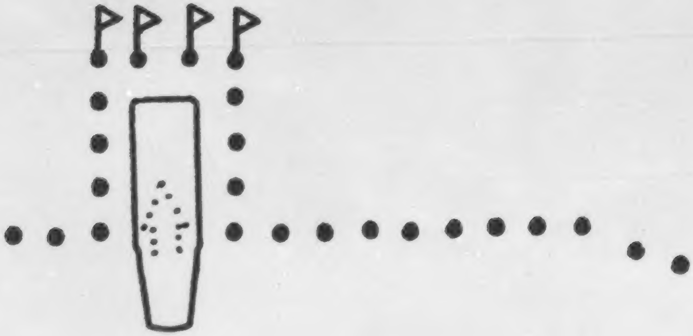
LIGHT BULB



Enter circle to right; cones diminish in width near exit.
Turning radius of test vehicle is radius of circle.

EXHIBIT #B-7-2

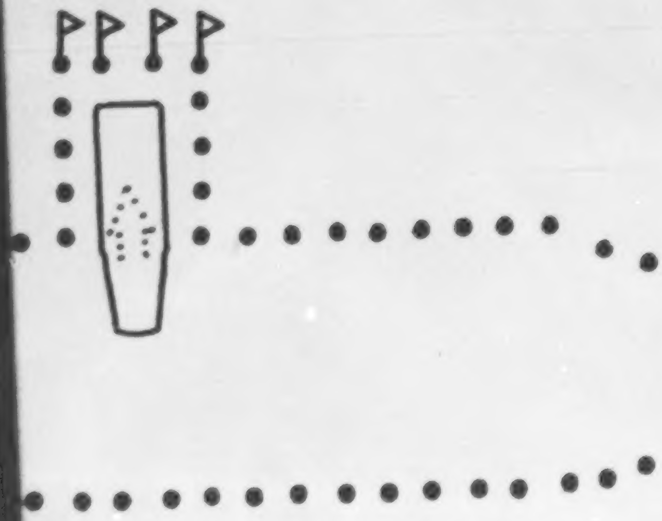
BACKING MANEUVER



Driveway dimensions: Width = vehicle plus four feet
Length = thirty feet

EXHIBIT #B-7-2

BACKING MANEUVER



iveway dimensions: Width = vehicle plus four feet

Length = thirty feet

NOTES/REFERENCES

(b) Phase II, Specialized Maneuvers

These exercises are simulations of actual driving hazards encountered every day. The defensive driving skills learned in Phase I are preparatory for this segment of the training, which, in turn, is essential to the final phase, Emergency Vehicle Operation.

Again, the instructor will first explain and demonstrate each maneuver. As in all phases of this program, safety is to be stressed and demanded. Any unacceptable or dangerous behavior will be grounds for immediate dismissal from the program.

NOTES/REFERENCES

- SERPENTINE (See Exhibit #B-8)

The serpentine is designed to develop the driver's ability to keep a vehicle under control during heavy and sudden weight changes. The importance of proper hand position, body position, and speed control will become apparent during this exercise. The effects of under-steering and over-steering are also demonstrated.

The exercise consists of a series of cones placed in a straight line at measured distances apart. The driver is to enter the course at the respective speed with the first cone on the left side of the vehicle, the second cone on the right side of the vehicle, the third cone on the left side, and so on, continuing to alternate sides, thus weaving through the serpentine at a constant speed. Any slowing or braking action will be immediately brought to the operator's attention via the radio, and the condition corrected.

When the forward exercise has been completed, the vehicle is placed in reverse gear, and the driver backs through at least three of the measured cones. (More may be desired, depending on the need of the student).

When the student performs this exercise, some common problems which the instructor should be alert to during forward motion include:

--Indecision upon approach of first cone.

--Improper hand position.

--Over-steering or under-steering.

--Improper vehicle position in relation to cones.

--Poor judgment of right side of vehicle.

--Failure to use mirror.

--Inadequate wheel base.

During reverse motion, common student problems are:

--Failure to use mirrors on both sides.

NOTES/REFERENC

--Improper direction of rear end of truck.

--Inadequate position of cone to rear of truck.

--Over-steering or under-steering.

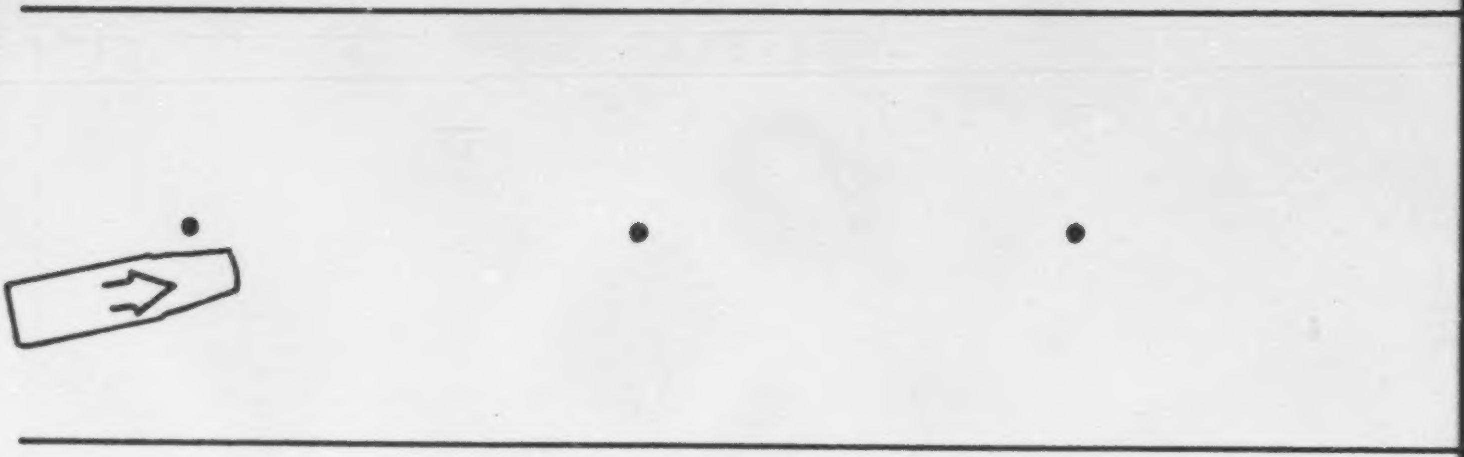
--Improper movement of front end of truck.

--Riding the clutch.

The student is graded on vehicle position, smoothness, number of cones hit, and time.

EXHIBIT #B-8

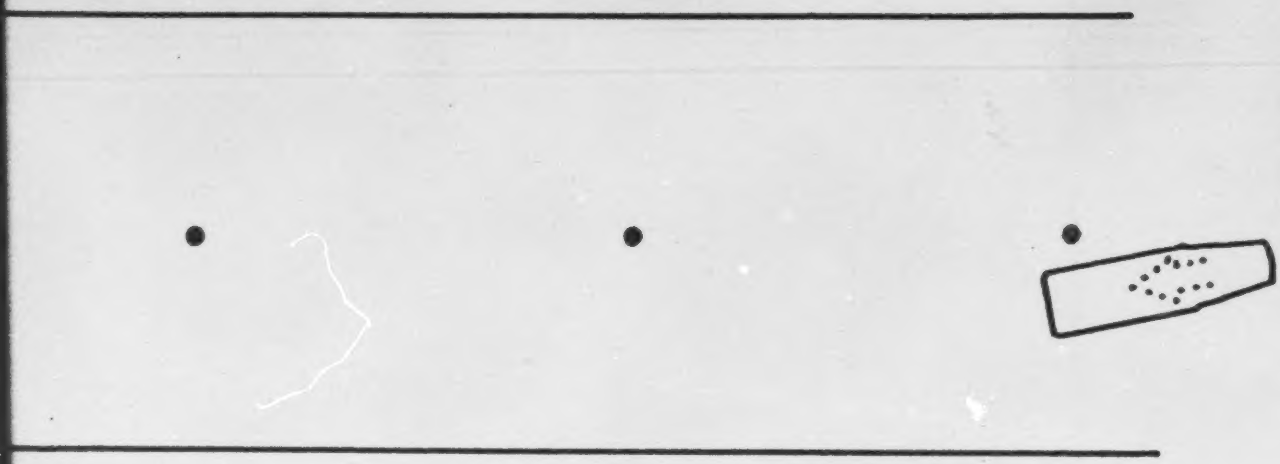
SERPENTINE



Road width: fifty feet
Distance between markers: thirty-five to fifty feet

EXHIBIT #B-8

SERPENTINE



Road width: fifty feet

Distance between markers: thirty-five to fifty feet

NOTES/REFER

● REACTION COURSE (See Exhibit #B-9)

In everyday driving, emergency situations arise, and how the driver copes with these situations is critical. The reaction course was developed to assist the driver in becoming familiar with personal limitations as well as capabilities. Skills learned during the serpentine are used in this exercise.

A signal, (either a normal traffic light or a flag regulated by an instructor), is approached at a specified speed (maintained by radar). Predetermined signals or colors are given to represent left turn, right turn, or stop. (For example, green could be designated to mean turn right, yellow to mean turn left, and red to indicate stop).

When a signal is given, the driver must react correctly and maneuver the vehicle through the proper lane without dislodging any cones. This exercise is also run at two (2) higher speeds, giving the student three (3) opportunities to become familiar with the exercise.

When the student performs this maneuver, some common problems which the instructor should watch for include:

--Improper speed.

--Failure to anticipate signal.

--Wrong reaction.

--Jerky movements.

--Improper hand position.

--Improper use of brakes; possible loss of steering.

--Over-steering.

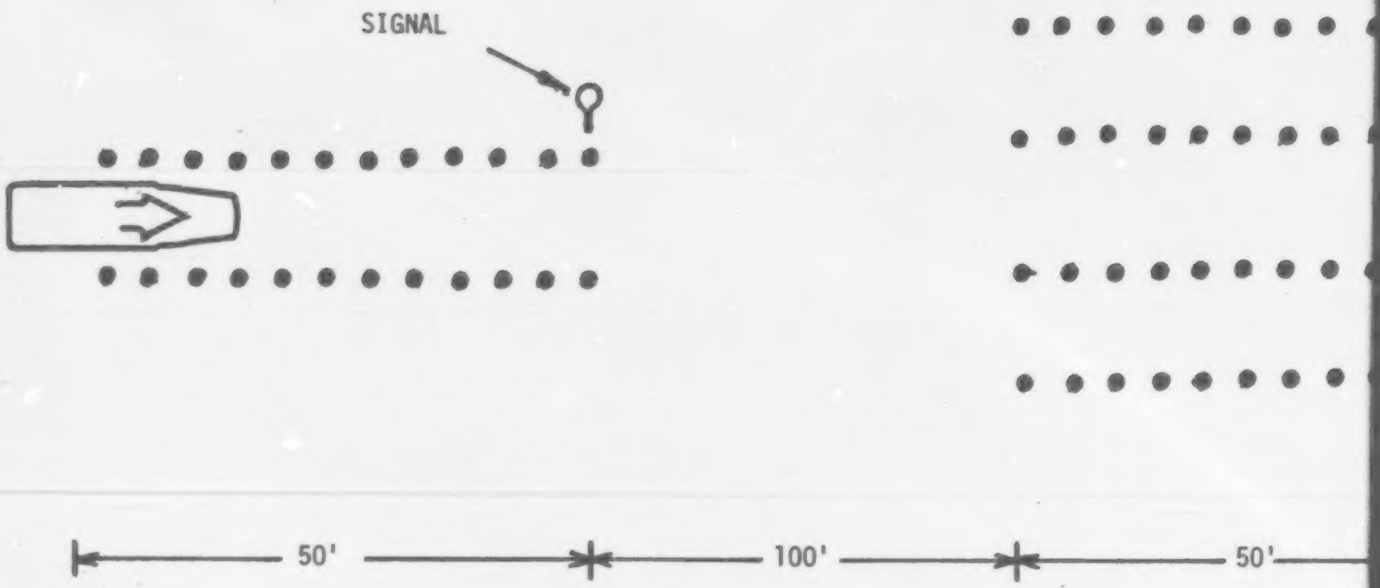
--Concentration on signal.

--Committed to one lane and attempting to move to another.

This exercise will be graded on the basis of speed--whether too fast or too slow, cones hit (two points for each), anticipation, control, and smoothness.

EXHIBIT #B-9

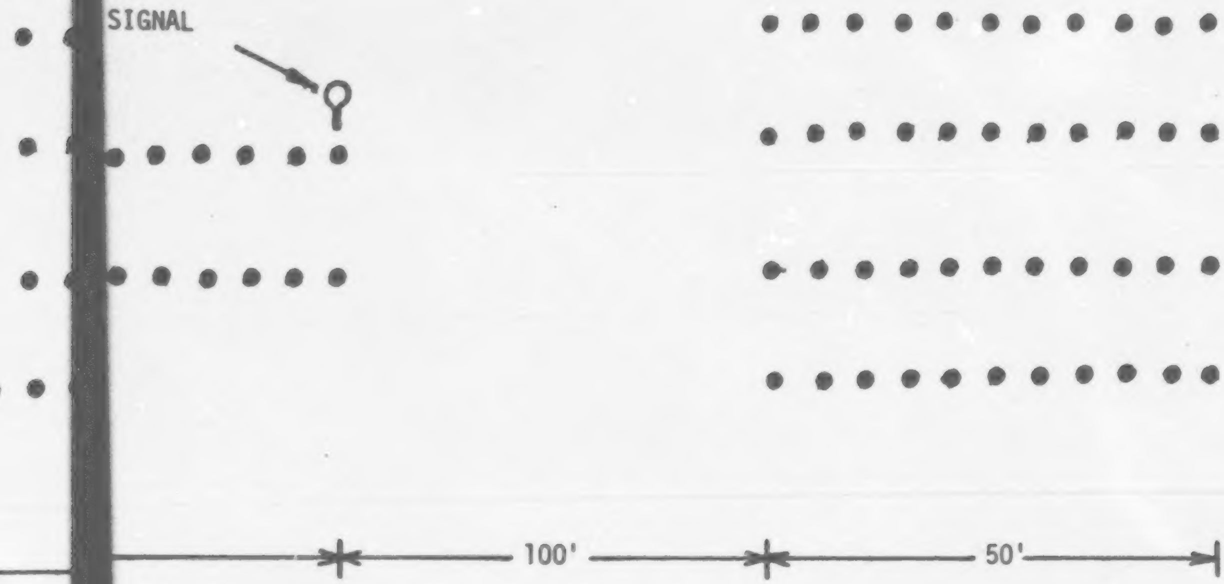
REACTION COURSE


SIGNAL
50'
100'
50'

Lane width: Vehicle plus four feet

EXHIBIT #B-9

REACTION COURSE


SIGNAL
100'
50'

Lane width: Vehicle plus four feet

NOTES/REFERENCES

- PERCEPTION COURSE (See Exhibit #B-10)

The objective of this exercise is to test the driver's ability to judge the position of the front bumper, the right wheels, and the rear of the vehicle.

The driver approaches the exercise at approximately 10 mph and stops the vehicle as close as possible to a cone barrier; the distance will be recorded. The operator then proceeds through a series (at least ten pair) of cones placed on the right side of the road so that the right tires will pass between these cones without dislodging them. Finally, the last set of cones is passed, and the vehicle is stopped. (Additional cones are placed to the right of the last set of cones to clearly indicate the position at which the rear of the truck must stop). With the rear of the vehicle in line with this last set of cones, the distance is recorded between the rear of the vehicle and the cones.

When the student performs this exercise, some common problems which the instructor should be alert to include:

--Improper approach to exercise.

--Rough braking.

--Failure to use mirrors on right side.

--Improper position of right front tire in relation to cones and right rear duals.

--Directing of steering wheel movement to correct position of rear duals.

--Failure to use right side mirror to judge position of rear of truck for final stop.

Scoring this exercise will be based on the number of cones dislodged according to the following formula:

0 cones = 50 points
1 cone = 45 points
2 cones = 40 points
3 cones = 35 points
4 cones = 30 points
5 or above = 0

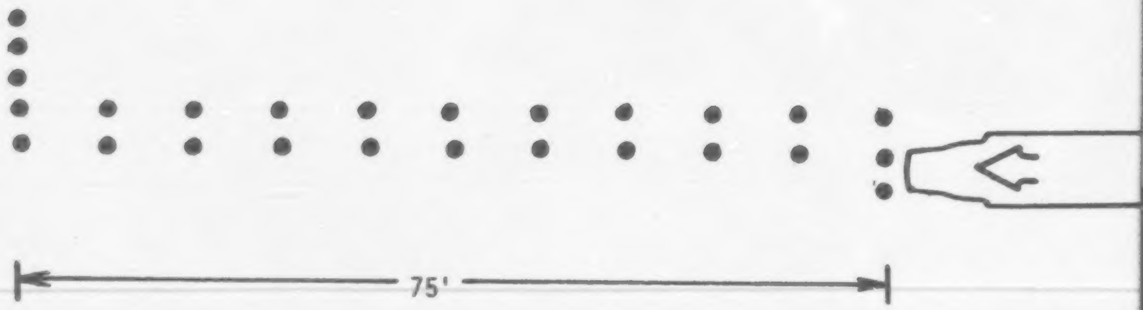
NOTES/REFERENCES

Distance measurements will be scored as follows:

0 - 6 = 50 points
6 - 9 = 45 points
9 - 12 = 40 points
12 - 15 = 35 points
15 - 18 = 30 points
over 18 = 0

EXHIBIT #B-10

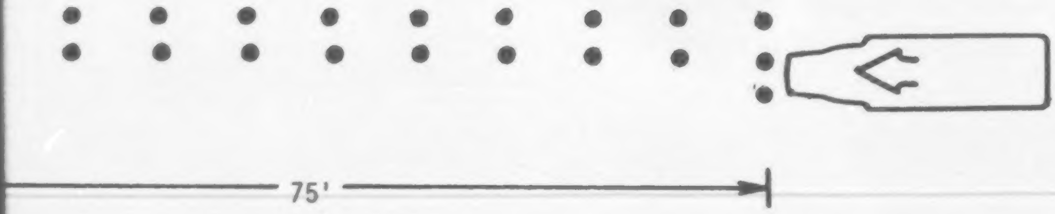
PERCEPTION COURSE



Distance between markers: Tire width plus four inches

EXHIBIT #B-10

PERCEPTION COURSE



nce between markers: Tire width plus four inches

NOTES/REFERENCES

(c) Phase III, Emergency Vehicle Operation

The Emergency Vehicle Operation phase is designed to provide the student with the opportunity to demonstrate and practice the skills learned up to this point in the course.

The actual physical layout of the course on which this phase of the training will be conducted depends entirely on the local facilities. Exhibit #B-11 illustrates a comprehensive layout, including defensive driving, backing, and specialized maneuvers, which has been developed by the American Trucking Association. Exhibits #B-12, B-12-1, B-12-2, and B-12-3 illustrate a more limited course layout on an oblong, rectangular, square, or parking lot facility. Of course, some combination of the comprehensive and the more limited layout can also be used. However, this phase will be eliminated from the training if the physical environment is such that the safety of the students and equipment cannot be maintained and guaranteed.

Although an exact course layout to be used at all facilities is impossible to develop because of the variety of physical characteristics of the sites expected to be used during implementation of this program throughout Virginia, it is recommended that certain maneuvers be included in this portion of the training:

--A 180° turn.

--An "S" maneuver.

--Width judgment at accelerated speed.

--Controlled braking.

All of the above maneuvers can be constructed with cones and still be very effective.

When the student performs these exercises, some common problems which the instructor should be alert to include:

--Failure to perform pre-driving habits.

--Improper hand position.

NOTES/REFERENCES

--Improper vehicle position and approach to curve.

--Too fast or too slow speed.

--Inadequate apex on curves.

--Early or late speed from curves.

--Inappropriate braking techniques (too much; too late; left foot).

--Inadequate control of vehicle.

--Lack of confidence.

--Incomplete physical control of self.

The student will be graded on vehicle operation, hand position, road position, braking techniques, speed into curve, apex on curves, and speed exiting curves.

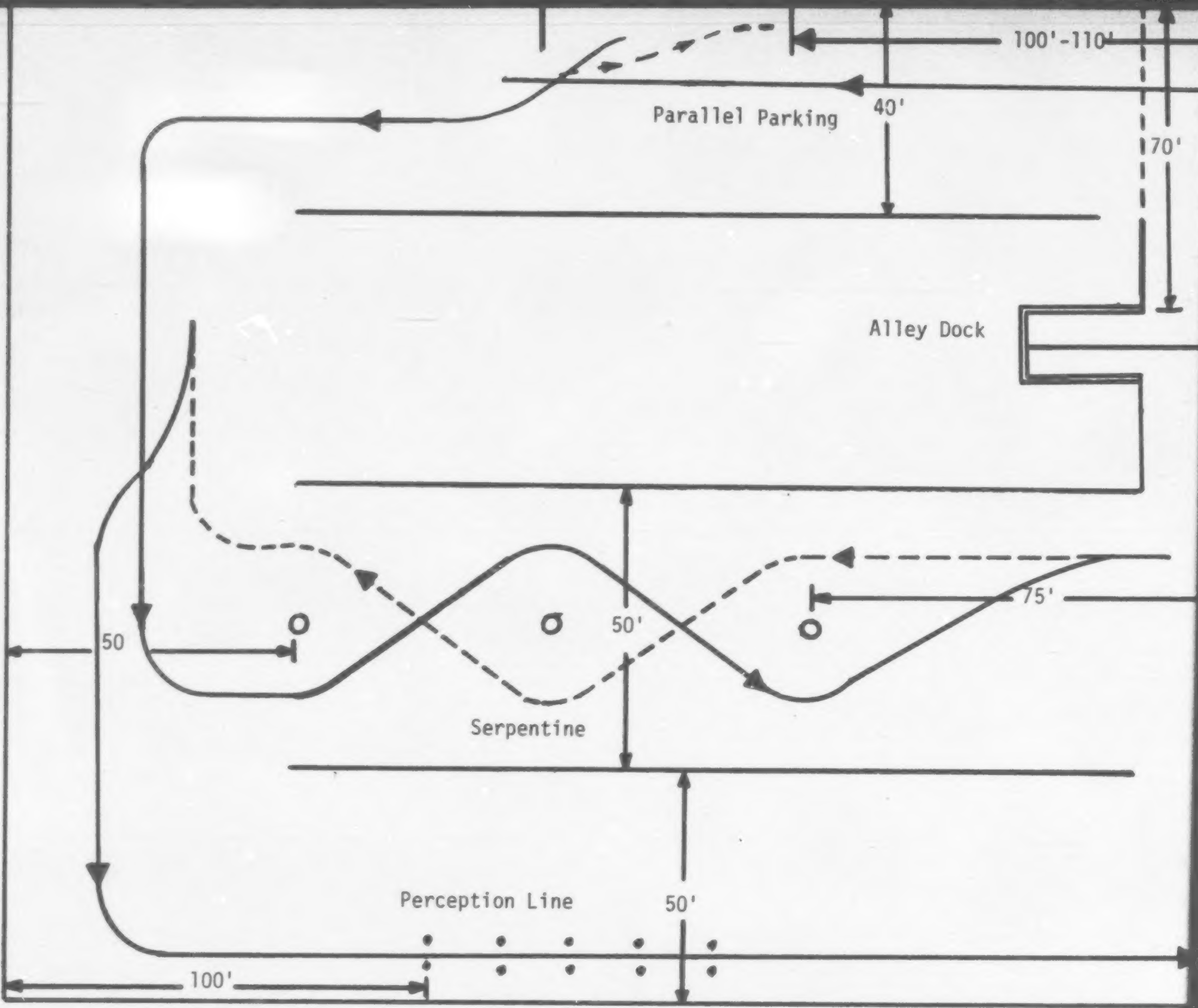

100'-110'
40'
Parallel Parking
70'
Alley Dock
50
50'
75'
Serpentine
Perception Line
50'
100'

EXHIBIT #B-11

SOURCE: American Trucking Association

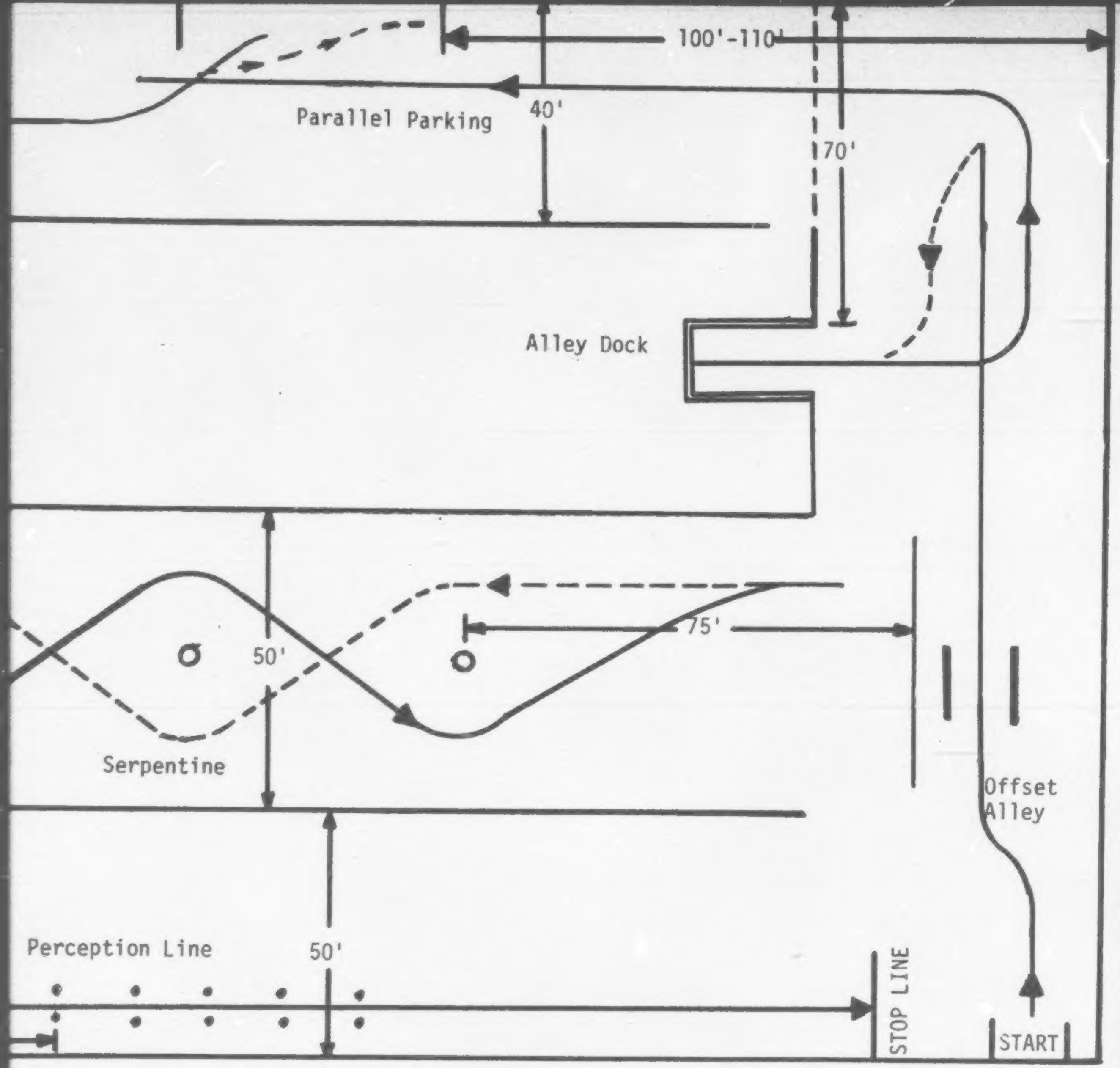

100'-110'
Parallel Parking
40'
70'
Alley Dock
75'
50'
Serpentine
Offset Alley
Perception Line
50'
STOP LINE
START

EXHIBIT #B-11

iation

EXHIBIT #B-12

EMERGENCY VEHICLE OPERATION:
SUGGESTED LAYOUT FOR AN OBLONG PHYSICAL FACILITY

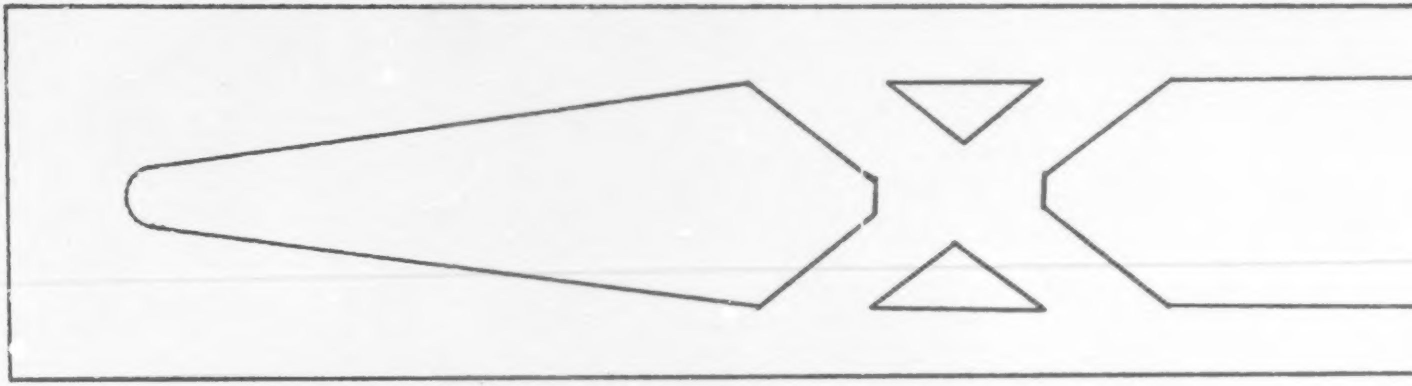


EXHIBIT #B-12

EMERGENCY VEHICLE OPERATION:
SUGGESTED LAYOUT FOR AN OBLONG PHYSICAL FACILITY

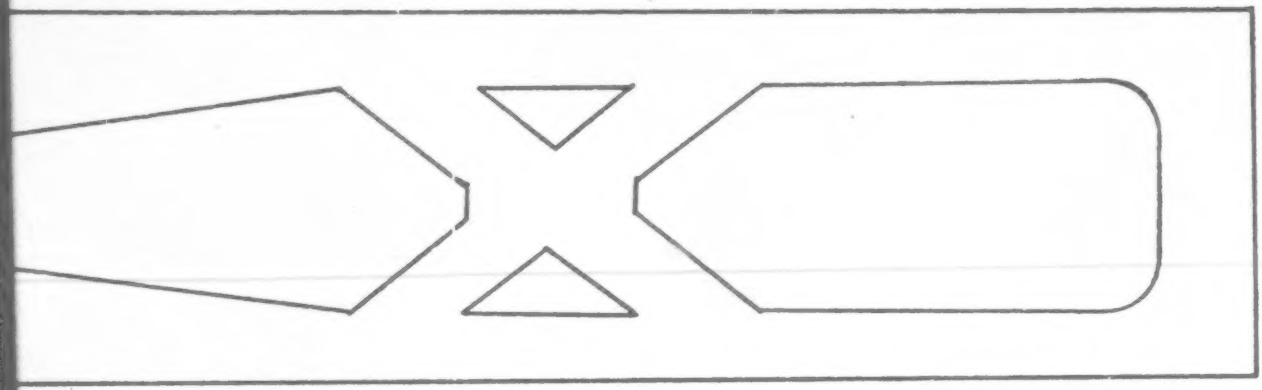


EXHIBIT #B-12-1

EMERGENCY VEHICLE OPERATION:
SUGGESTED LAYOUT FOR A RECTANGULAR PHYSICAL FACILITY

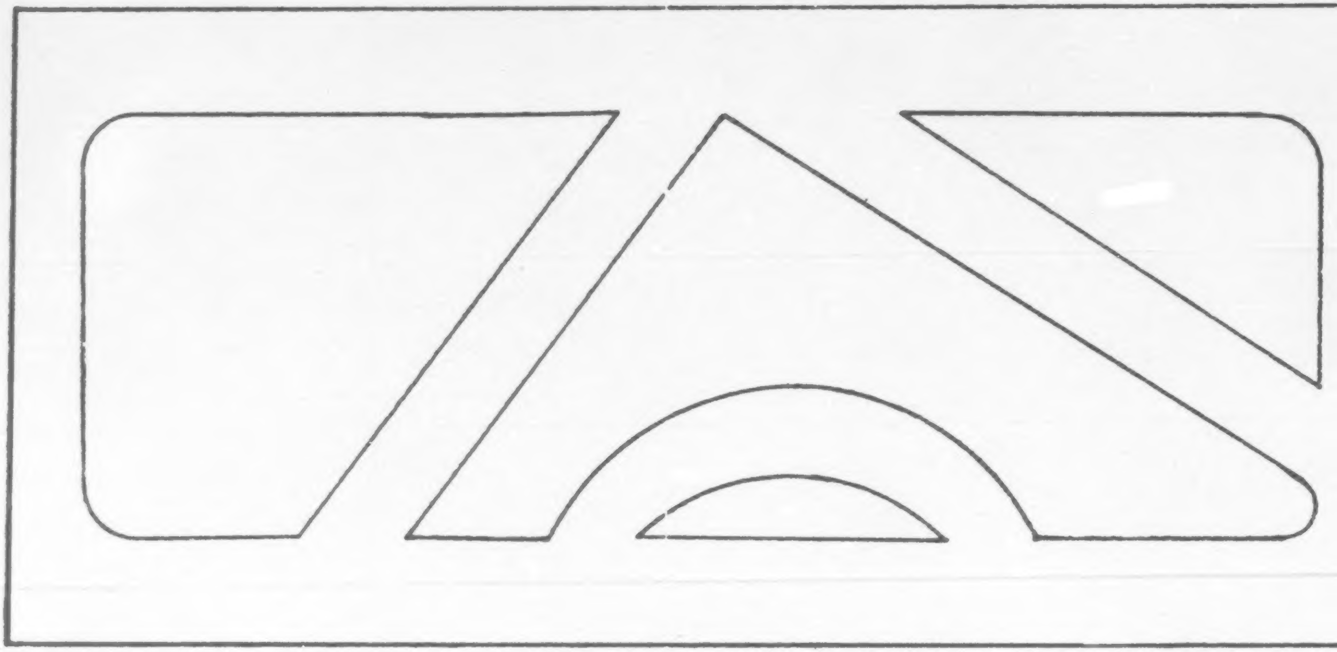


EXHIBIT #B-12-1

EMERGENCY VEHICLE OPERATION:
STED LAYOUT FOR A RECTANGULAR PHYSICAL FACILITY

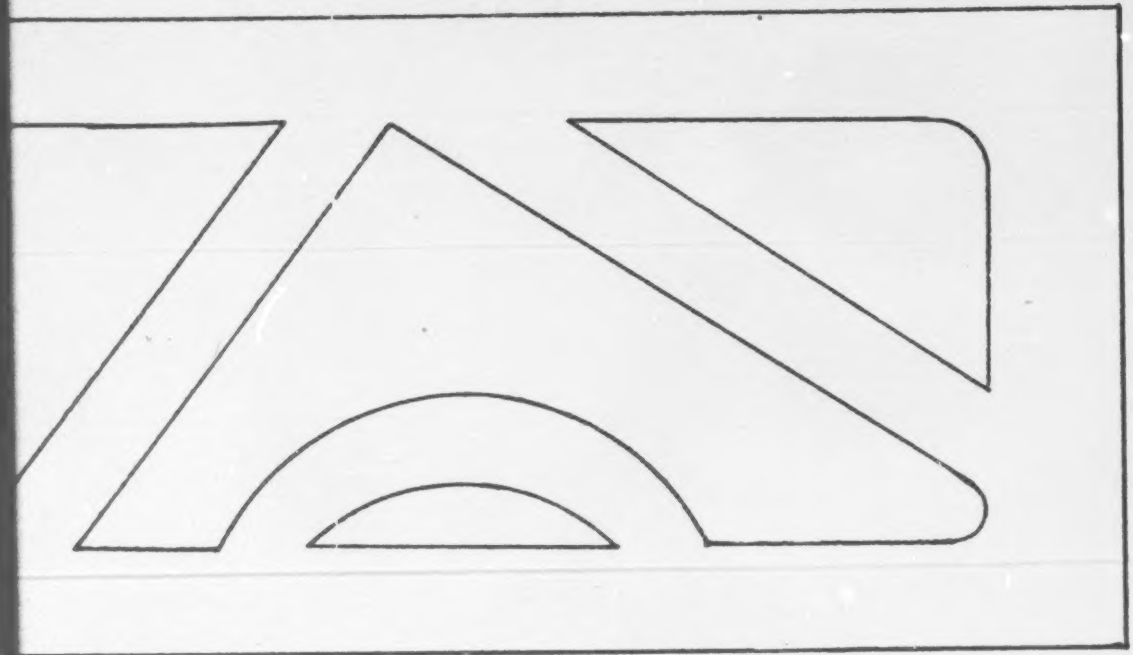


EXHIBIT #B-12-2

EMERGENCY VEHICLE OPERATION:

SUGGESTED LAYOUT FOR A SQUARE PHYSICAL FACILITY

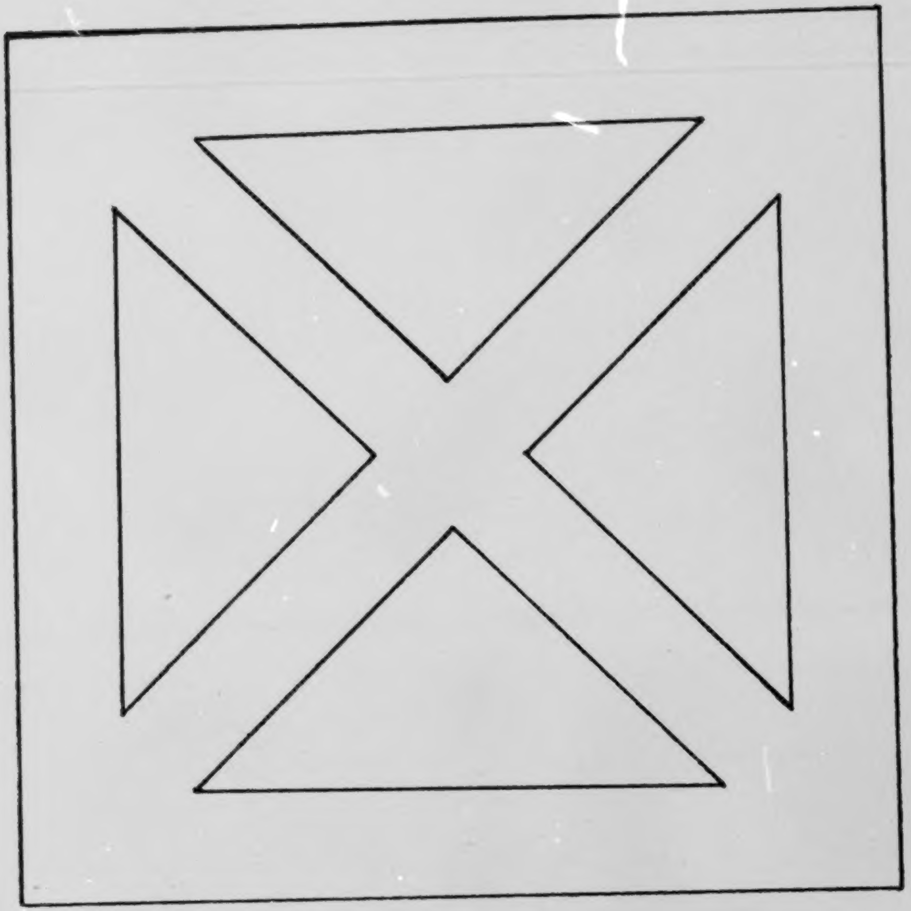
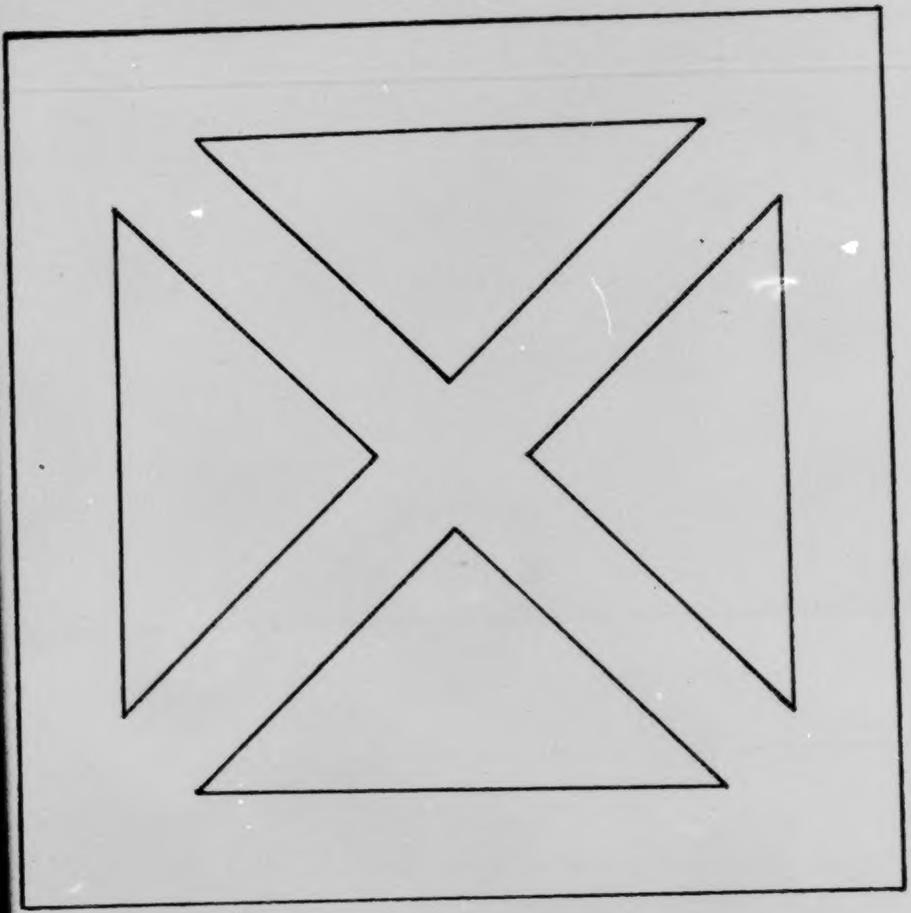


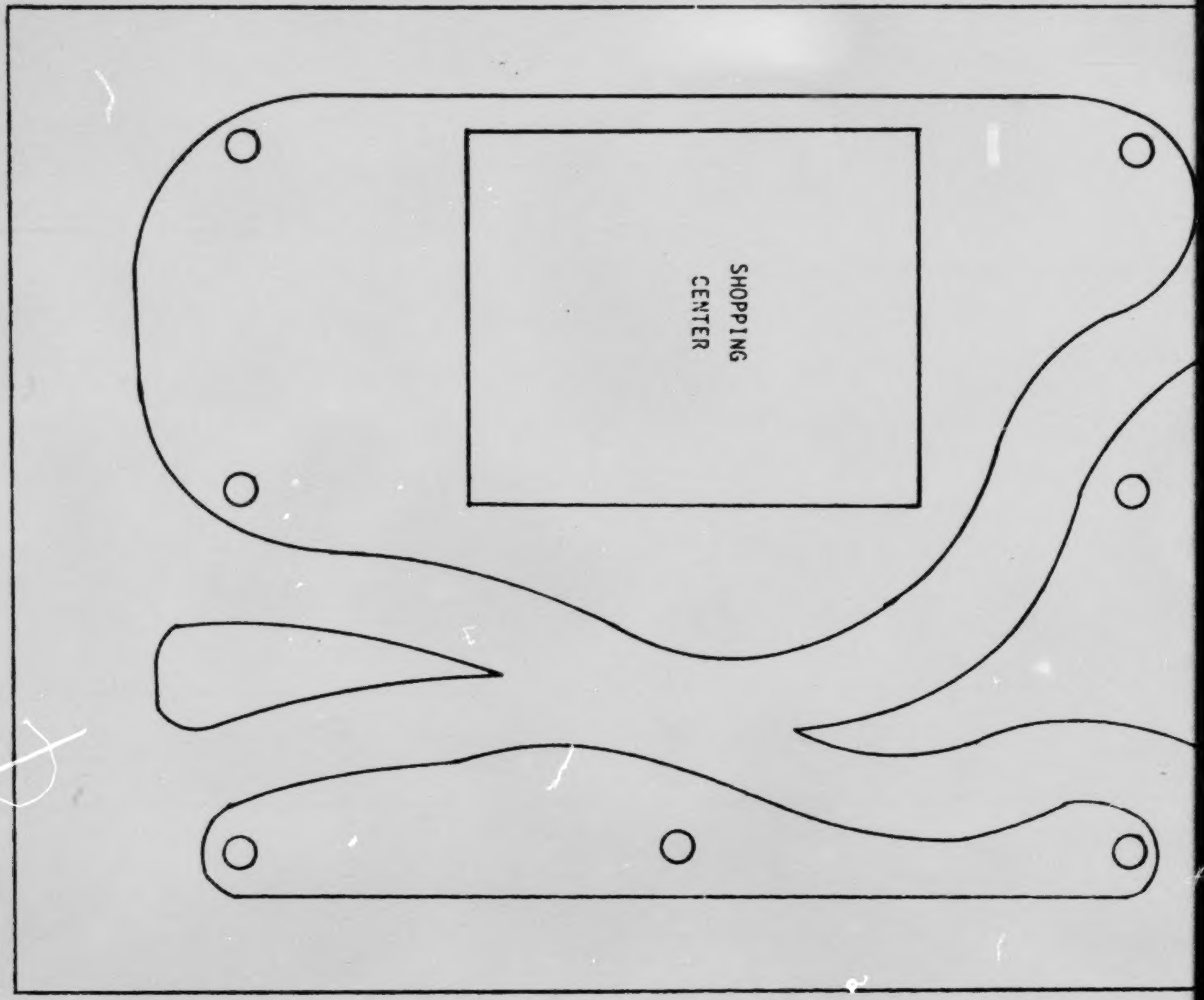
EXHIBIT #B-12-2

EMERGENCY VEHICLE OPERATION:
SUGGESTED LAYOUT FOR A SQUARE PHYSICAL FACILITY



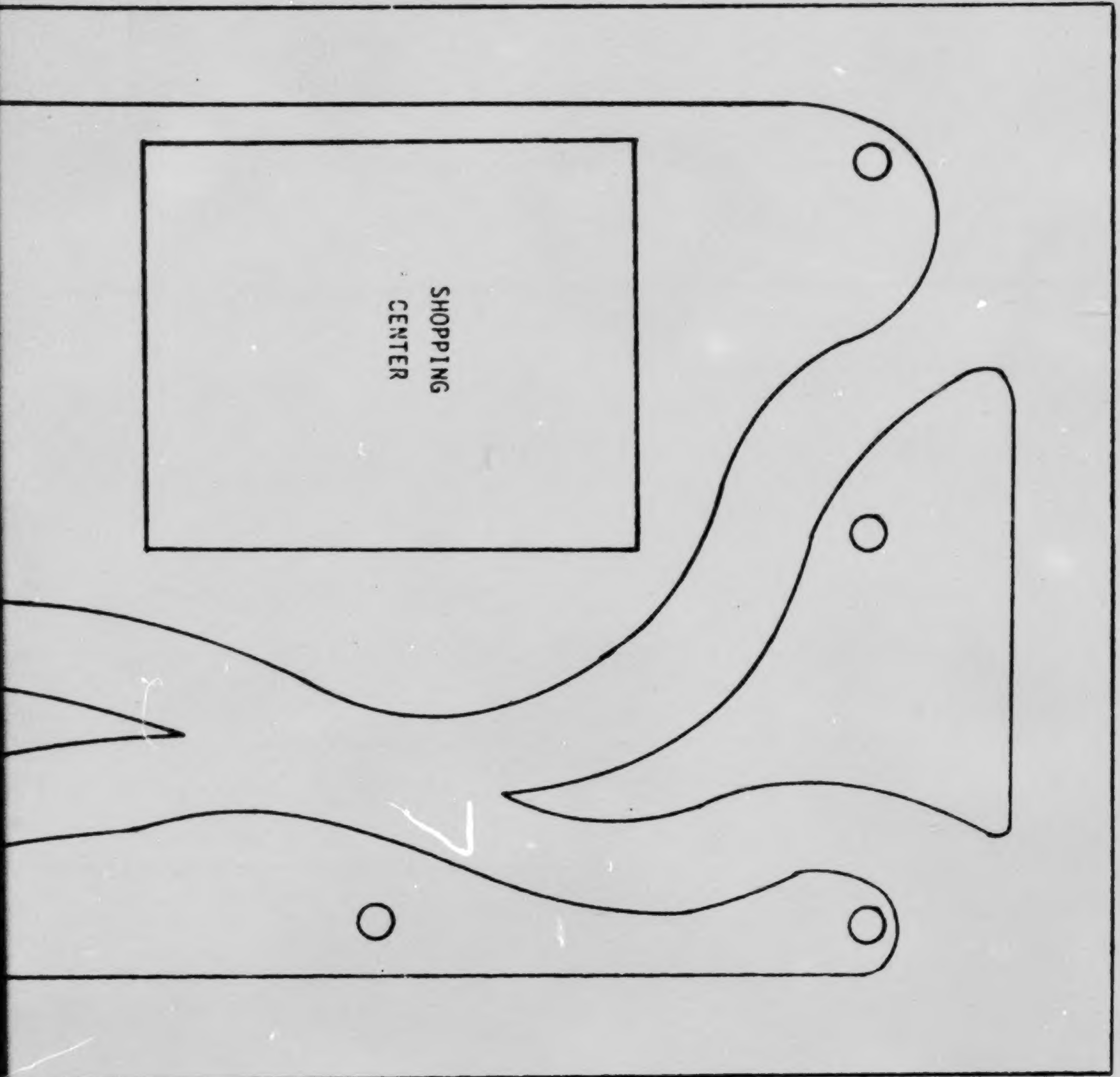
EMERGENCY VEHICLE OPERATION:

SUGGESTED LAYOUT FOR A SHOPPING CENTER PARKING LOT PHYSICAL FACILTIY


SHOPPING
CENTER

EMERGENCY VEHICLE OPERATION:

ED LAYOUT FOR A SHOPPING CENTER PARKING LOT PHYSICAL FACILTIY


SHOPPING
CENTER

6

CHAPTER FIVE

PRACTICAL APPLICATIONS: EMERGENCY MEDICAL SERVICES

NOTES/REFERENCES

CHAPTER FIVE

PRACTICAL APPLICATIONS:
EMERGENCY MEDICAL SERVICES

INTRODUCTION

Chapter Two of this training manual has concentrated upon that background information which is necessary for all students to be familiar with before initiating operation of an emergency vehicle. Qualifications, skills, objectives, performance criteria, and other issues have been discussed in order to equip the student with the foundations upon which appropriate application of emergency vehicle driving skills are based.

With this understanding and appreciation of the complexities of emergency vehicle operation, the student should now be ready to assemble data and formulate concepts and techniques into actual operational procedures. Therefore, Chapter Five is designed to familiarize students with the legal aspects, policies, responsibilities, habits, and skills necessary for the proper operation of an emergency vehicle.

While the emergency operation of enforcement, fire, and ambulance vehicles involves many similarities, there are also distinct characteristics pertaining to each of these service areas alone. For this reason, each area--enforcement, fire, and emergency medical services--will be discussed separately to aid in the organized presentation of the material by the instructor.

STUDENT PERFORMANCE OBJECTIVES

Upon completion of this portion of the training, the emergency medical service (EMS) driver should have developed those skills and attitudes that will enable operation of an ambulance with safety, precision, and confidence.

THE ROLE OF EMERGENCY VEHICLE OPERATION TRAINING IN EMS

As a daily part of the EMS function, emergency medical technicians are required to operate their vehicles in non-emergency and emergency circumstances. But often they are inadequately prepared to perform this driving function in a professional manner.

NOTES/REFERENCES

Not only must emergency medical technicians be expert in the application of first aid, they must also contend with emergency driving, operate a vehicle during weather conditions in which the average motorist would be reluctant to drive, and may have to compensate for fatigue.

According to the National Safety Council, about 26,000 emergency vehicles were involved in motor vehicle accidents in 1973, some 300 of which were fatalities.[1] With 1,080 emergency vehicle accidents in 1973 (or 4.15% of the national total that year), Virginia was responsible for 8 fatality crashes, 269 personal injury crashes, and 803 property damage crashes.[2] Yet, drivers of these vehicles often receive little, if any, formalized training in the driving function.

Safe driving is an important phase of transporting the critically ill and injured to hospital facilities. Running the risk of killing or injuring motorists and pedestrians and jeopardizing the safety of the victim being transported cannot be justified. EMS responsibilities can far more effectively be carried out by applying the rules of defensive driving, compensating for the lack of skill and improper judgment of others, and using plain common sense.[3]

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[1] National Safety Council, Accident Facts (Chicago, Illinois: National Safety Council, 1974), p. 56.

[2] Virginia Crash Facts (Richmond, Virginia: Department of State Police, 1974), pp. 52-54.

[3] Robert F. Hanlon, Safe Driving of Ambulance (Chicago, Illinois: Chicago Fire Department, 1969), p. 1.

NOTES/REFERENCES

(A) LEGAL ASPECTS

Before any skill techniques can appropriately be applied to the driving task, it is essential that the emergency medical technician be familiar with and thoroughly comprehend the legal responsibilities and regulations governing operation of an ambulance or rescue vehicle under emergency situations. In the state of Virginia, the following sections of the Motor Vehicle Code are applicable to emergency vehicle operation and should be completely understood by the driver before engaging in the emergency driving task.

46.1-168 CHAPTER APPLICABLE TO DRIVERS OF ALL VEHICLES REGARDLESS OF OWNERSHIP.--The provisions of this chapter applicable to the drivers of vehicles upon the highways shall apply to the drivers of all vehicles regardless of ownership subject to such specific exceptions as are set forth in this chapter. (Code 1950, Section 46-181; 1958, c. 541).

Cross reference.--As to consideration of defendant's prior traffic record before imposing sentence for certain traffic offenses, see Sections 19.2-186.1 and 19.2-186.2.

State statutes regulating the flow of traffic at intersections take precedence over local ordinances which prohibit drivers of vehicles from passing through or between processions, unless specific exception is made in the statutes. Paige v. Edgar, 210 Va. 54, 168 S.E.2d 103 (1969).

Police cars, ambulances, etc.--In Virginia the drivers of police cars, ambulances, and other State, county, and city-owned vehicles are subject to all traffic regulations unless a specific exception is made. Virginia Transit Co. v. Tidd, 194 Va. 418, 73 S.E.2d 405 (1952); Manhattan For Hire Car Corp. v. O'Connell, 194 Va. 398, 73 S.E.2d 410 (1952). For statute providing exceptions for certain emergency vehicles, see Section 46.1-226.

46.1-199 EXCEPTIONS TO SPEED LIMITATIONS; WHEN EXEMPTIONS APPLICABLE; PROSECUTION FOR RECKLESSNESS; CIVIL LIABILITY.--(a) The speed limitations set forth in this chapter shall not apply to vehicles when operated with due regard for safety under the direction of the police in the chase or apprehension of violators of the law, or of persons charged with or suspected of any such violations, or in testing

NOTES/REFERENCES

the accuracy of speedometers on police vehicles, or in testing the accuracy of the radio microwave or other electrical devices specified in Section 46.1-198 nor to fire department vehicles when traveling in response to a fire alarm or pulmotor call, nor to ambulances when traveling in emergencies outside the corporate limits of cities and towns.

(b) These exemptions, hereinbefore granted to such a moving vehicle, shall apply only when the operator of such vehicle displays a flashing, blinking, or alternating red light and sounds a siren, bell, exhaust whistle, or air horn designed to give automatically intermittent signals, as may be reasonably necessary, and, only when there is in force and effect for such vehicle standard automobile liability insurance covering injury or death to any one person in the sum of at least one hundred thousand dollars in any one accident, and subject to the limit for one person, to a limit of three hundred thousand dollars because of bodily injury to or death of two or more persons in any one accident, and to a limit of ten thousand dollars because of injury to or destruction of property of others in any one accident. Such exemptions shall not, however, protect the operator of any such vehicle from criminal prosecution for conduct constituting reckless disregard for the safety of persons and property. Nothing in this section shall be construed to release the operator of any such vehicle from civil liability for failure to use reasonable care in such operation. (Code 1950, Section 46-216; 1950, p. 84; 1958, c. 541; 1964, c. 15; 1966, c. 699; 1974, c. 365).

Cross reference.--For further provisions as to exemptions, see Section 46.1-226.

The 1974 amendment substituted the language beginning "one hundred thousand dollars in any one accident" for "twenty-five thousand dollars" at the end of the first sentence of subsection (b).

Law Review.--For survey of Virginia law on torts for the year 1969-1970, see 56 Va. L. Rev. 1419 (1970).

The effect of this section, creating exemptions to speed limits, is that violation of the statute fixing speed limits, Section 46.1-193, is not negligence per se if the exemption is applicable. Yates v. Potts, 210 Va. 636, 172 S.E.2d 784 (1970).

NOTES/REFERENCES

Speed limitations do not apply to police vehicles operated, with due regard for safety, in apprehension of violators. Yates v. Potts, 210 Va. 636, 172 S.E.2d 784 (1970).

The requirement that a siren be sounded "as may be reasonably necessary" should be interpreted with due regard for safety of police officer conducting a chase. Yates v. Potts, 210 Va. 636, 172 S.E.2d 784 (1970).

Applied in Virginia Transit Co. v. Tidd, 194 Va. 418, 73 S.E.2d 405 (1952); Whittaker v. Van Fossan, 297 F.2d 245 (4th Cir. 1961).

46.1-225 APPROACH OF POLICE OR FIRE-FIGHTING VEHICLES, RESCUE VEHICLES OR AMBULANCES; VIOLATION AS FAILURE TO YIELD RIGHT-OF-WAY.--(a) Upon the approach of any vehicle listed in paragraph (a) of Section 46.1-226 giving audible signal by sirens, exhaust whistle, or air horn designed to give automatically intermittent signals, the driver of every other vehicle shall immediately drive the same to a position as near as possible and parallel to the right-hand edge or curb, clear of any intersection of highways, and shall stop and remain in such position unless otherwise directed by a police or traffic officer until such vehicle shall have passed. This provision shall not operate to relieve the driver of any such vehicle from the duty to drive with due regard for the safety of all persons using the highway, nor shall it protect the driver of any such vehicle from the consequences of an arbitrary exercise of such right-of-way.

(b) Violation of this section shall constitute failure to yield the right-of-way. (Code 1950, Section 46-241; 1958, c. 541; 1960, c. 570; 1966, cc. 613, 699; 1968, c. 89).

Purpose of section.--It was to give some leniency to police, fire, and ambulance vehicles that this section and Section 46.1-226 were enacted. Phillips v. United States, 182 F. Supp. 312 (E.D. Va. 1960).

This section apparently grants a right-of-way to an ambulance operating under an emergency run. Phillips v. United States, 182 F. Supp. 312 (E.D. Va. 1960).

46.1-226 POLICE, FIRE-FIGHTING AND RESCUE VEHICLES AND AMBULANCES EXEMPT FROM REGULATIONS IN CERTAIN EMERGENCIES; EXCEPTIONS AND ADDITIONAL REQUIREMENTS.--(a) The operator

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of (1) any police vehicle operated by or under the direction of a police officer in the chase or apprehension of violators of the law or persons charged with or suspected of any such violation, (2) any vehicle used for the purpose of fighting fire including publicly owned State forest warden vehicles not to exceed two hundred in number, when traveling in response to a fire alarm or emergency call, (3) any vehicle owned by a political subdivision of the Commonwealth for rescue purposes when traveling in response to a fire alarm or an emergency call, or (4) any ambulance or rescue or life-saving vehicle designed or utilized for the principal purposes of supplying resuscitation or emergency relief where human life is endangered, whether such vehicle is publicly owned or operated by a nonprofit corporation or association, when such vehicle is being used in the performance of public services, and when such vehicle is operated under emergency conditions, may, without subjecting himself to criminal prosecution:

(1) Proceed past red signal, light, stop sign or device indicating moving traffic shall stop if the speed and movement of the vehicle is reduced and controlled so that it can pass a signal, light or device with due regard to the safety of persons and property.

(2) Park or stand notwithstanding the provisions of this chapter.

(3) Disregard regulations governing a direction of movement of vehicles turning in specified directions so long as the operator does not endanger life or property.

(4) Pass or overtake, with due regard to the safety of persons and property, another vehicle at any intersection.

(b) These exemptions, hereinbefore granted to such a moving vehicle, shall apply only when the operator of such vehicle displays a flashing, blinking or alternating red light and sounds a siren, exhaust whistle, or air horn designed to give automatically intermittent signals, as may be reasonably necessary, and, only when there is in force and effect for such vehicle standard automobile liability insurance covering injury or death to any person in the sum of at least one hundred thousand dollars because of bodily injury to or death of one person in any one accident and, subject to the limit for one person, to a limit of three hundred thousand dollars because of bodily injury to or death of two or more

persons in any one accident, and to a limit of ten thousand dollars because of injury to or destruction of property of others in any one accident. Such exemptions shall not, however, protect the operator of any such vehicle from criminal prosecution for conduct constituting reckless disregard of the safety of persons and property. Nothing in this section shall be construed to release the operator of any such vehicle from civil liability for failure to use reasonable care in such operation. (Code 1950 (Suppl.) Section 46-241.1; 1954, c. 356; 1956, c. 192; 1958, c. 541; 1966, cc. 350, 699; 1968, c. 89; 1974, c. 365).

The 1974 amendment substituted "one hundred thousand dollars" for "fifty thousand dollars" and "ten thousand dollars" for "five thousand dollars" in the first sentence of subsection (b).

Law Review.--For survey of Virginia law on torts for the year 1971-1972, see 58 Va. L. Rev. 1349 (1972).

Purpose of section.--It was to give some leniency to police, fire and ambulance vehicles that this section and Section 46.1-225 were enacted. Phillips v. United States, 182 F. Supp. 312 (E.D. Va. 1960).

The legislature requires the driver of an authorized emergency vehicle to drive with due regard for the safety of all persons, and the same standard of care must apply regardless of whether the operator sues or is being sued. Smith v. Lamar, 212 Va. 820, 188 S.E.2d 72 (1972).

The proper standard of care required of the driver of an emergency police vehicle is the standard of care of a prudent man in the discharge of official duties of a like nature under like circumstances. Smith v. Lamar, 212 Va. 820, 188 S.E.2d 72 (1972).

The standard of care which would customarily be required of the ordinary motorist does not apply to a police officer operating his vehicle under certain conditions prescribed by law, in hot pursuit of a law violator. Smith v. Lamar, 212 Va. 820, 188 S.E.2d 72 (1972).

As to obedience to traffic lights by drivers of emergency vehicles under former law, see Virginia Transit Co. v. Tidd, 194 Va. 418, 73 S.E.2d 405 (1952); Manhattan For Hire Car Corp. v. O'Connell, 194 Va. 398, 73 S.E.2d 410 (1952).

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46.1-250.1 STOPPING VEHICLE OF ANOTHER; BLOCKING ACCESS TO PREMISES; DAMAGING OR THREATENING COMMERCIAL VEHICLE OR OPERATOR THEREOF.--(a) It shall be unlawful for any person: (1) to intentionally and willfully stop the vehicle of another for the sole purpose of impeding its progress on the highways, except in the case of an emergency or mechanical breakdown; (2) to intentionally and willfully block the access to and from any premises of any service facility operated for the purposes of selling fuel for motor vehicles; of performing repair services on motor vehicles; or of furnishing food, rest or any other convenience for the use of persons operating motor vehicles engaged in intrastate and interstate commerce upon the highways of this State; (3) to intentionally and willfully damage any vehicle engaged in commerce upon the highways of this State, or threaten, assault or otherwise harm the person of any operator of such motor vehicle engaged in the operation of such motor vehicle being used for the transportation of property for hire upon the highways of this State.

(b) Any person violating the provisions of this section shall be guilty of a misdemeanor, and in addition, his operator's or chauffeur's license may be revoked by the court for a period not in excess of one year. The court shall forward such license to the Division of Motor Vehicles as provided by law.

(c) The provisions of this section shall not apply to any law-enforcement officer, school guard, fireman or member of a rescue squad, when they are engaged in the performance of their duties or to any vehicle owned or controlled by the Virginia Department of Highways while engaged in the construction, reconstruction or maintenance of highways. (1974, c.457).

46.1-267 OTHER PERMISSIBLE LIGHTS; POLICE AND FIRE-FIGHTING VEHICLES, EMERGENCY VEHICLES, ETC.--Any motor vehicle may be equipped with not to exceed two fog lamps, one passing lamp, one driving lamp, two side lamps of not more than six candlepower; interior light of not more than fifteen candlepower; vacant or destination signs on vehicles operated as public carriers, and signal lamps.

Only those vehicles listed in paragraph (a) of Section 46.1-226 and paragraph (a) of Section 46.1-267 and school buses may be equipped with flashing, blinking or alternating red

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emergency lights of a type approved by the Superintendent.

Vehicles used for the principal purpose of towing or servicing disabled vehicles or in constructing, maintaining and repairing highways or utilities on or along public highways, vehicles used for the principal purpose of removing hazardous or polluting substances from State waters and drainage areas on or along public highways for use only when performing such duties and hi-rail vehicles may be equipped with flashing, blinking or alternating amber warning lights of a type approved by the Superintendent, but such lights on hi-rail vehicles shall be activated only when such vehicles are operated on railroad rails.

(a) A member of any fire department, volunteer fire company or volunteer rescue squad may equip one vehicle owned by him with a flashing or steady-burning red light of a type approved by the Superintendent, for use by him only in answering emergency calls.

Any person violating the provision of this section shall be guilty of a misdemeanor.

(b) Blue lights, steady or flashing, of a type approved by the Superintendent shall be reserved for civil defense vehicles, publicly or privately owned.

No motor vehicle shall be operated on any highway which is equipped with any lighting device other than lamps required or permitted in this article or required or approved by the Superintendent or required by the federal Department of Transportation. (Code 1950, Section 46-273; 1954, c. 310; 1958, c. 541; 1960, cc. 156, 391; 1962, c. 512; 1966, cc. 655, 664; 1968, c. 89; 1972, c. 7; 1974, c. 537).

46.1-285 SIRENS OR EXHAUST WHISTLES UPON EMERGENCY VEHICLES.--Every police vehicle and vehicle used for the purpose of fighting fire and every ambulance or rescue vehicle used for emergency calls shall be equipped with a siren, exhaust whistle or air horn designed to give automatically intermittent signals of a type not prohibited by the Superintendent. Publicly owned vehicles used by a State forest warden, not to exceed two hundred in number in the Commonwealth, may also be so equipped. (Code 1950, Section 46-291; 1958, c. 541; 1960, c. 391; 1966, cc. 655, 664, 699; 1968, c. 89).

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19.1-94 FLIGHT; PURSUIT; ARREST ANYWHERE IN THE STATE. If a person charged with an offense shall, after or at the time the warrant is issued for his arrest, escape from or out of the country or corporation in which the offense is alleged to have been committed, the officer to whom the warrant is directed may pursue and arrest him anywhere in the State; or any person authorized to issue process under Section 19.1-90, of a county or corporation other than that in which the warrant was issued, on being satisfied of the genuineness thereof, may endorse thereon his name and official character, and such endorsement shall operate as a direction of the warrant to an officer of such endorser's county or corporation.

The authority of any officer of any county, city or town authorized by law to make arrests shall extend throughout the adjoining county, city or town in which it may be necessary to go, without a warrant, when actually in close pursuit of a person who has committed a misdemeanor in the presence and in the jurisdiction of such officer, and such authority shall extend throughout the State when in close pursuit of a person sought to be arrested on the ground that such person has committed a felony in this State, even though no warrant has been issued. (Code 1950, S. 19-73; 1950, p. 612; 1960, c. 366).

Cross References. As to special officers, see Section 15-570. As to warrants for escaped patients of State hospital, see Sections 37-97, 37-97.1.

Officer may summon residents of another county to his assistance. In view of the provision of this section authorizing the officer to whom a warrant is directed to pursue and arrest an alleged criminal anywhere in the State, an officer, in case of resistance to arrest or a search warrant, may summon residents of another county to assist him, notwithstanding the provision of Section 15-515 authorizing such officer to summon to his assistance people "of his county or corporation." Dellastatious v. Boyce, 152 Va. 368, 147 S.E. 267.

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(B) DRIVER SELECTION

Unlike a police department, where all officers are expected to drive as part of their job assignment, emergency medical services can and must select those individuals best qualified to operate a motor vehicle.

Careful consideration must be given to selecting ambulance and rescue vehicle drivers, using the following criteria as guidelines: physical fitness, emotional stability, reactions under stress conditions, and previous driving record.[4]

After these select personnel are chosen, they should attend and satisfactorily complete a specialized driver training course. During this training exposure, negative characteristics may come to light (which further emphasizes the importance and need for training), and if so, the individual should not be allowed to operate an ambulance.

(C) NATURE OF THE CALL

Departmental, squad, or company policy should dictate what constitutes an "emergency" call. In the excitement of the situation, a caller may merely state that an ambulance is needed, give the address, and hang up. This should be responded to as an emergency. But if sufficient information is received to determine that the situation is a non-emergency, and still the driver takes the responsibility to travel as if it were an emergency, some form of reprimand is in order.

Upon arrival at the scene, evaluation of the injured or sick and assessment of the type of emergency is entirely the discretion of the emergency medical technicians present. The primary point to remember is that proper care should always be emphasized, never using speed as a substitute.[5] High speed runs are not only dangerous, but they can seriously aggravate the injury or illness of the victim. For example, the noise of the siren, rapid maneuvers of the vehicle, and

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[4] Robert F. Hanlon, Safe Driving of Ambulance (Chicago, Illinois: Chicago Fire Department, 1969), pp. 1-2.

[5] Harvey Grant and Robert Murray, Emergency Care (Bowie, Maryland: Robert J. Brady Company, 1971), p. 14.

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high speed might excite a heart patient whose already weakened heart could fail. The continuous jolting of the ambulance may cause a fractured vertebrae to slip, although it was considered immobilized, and even if the spinal cord were not severed at the time of the accident, it could well be during transportation to the hospital. In fact, in some cases, patients with certain injuries or illnesses should be transported so slowly and carefully that the lack of speed almost appears unreasonable. In a recent study of 2,500 ambulance runs, it was judged that haste in transporting the injured was unnecessary in 98% of the cases. Furthermore, there would have been no difference in the outcome of most of the cases (2,455) had the patients been transported according to standard safety regulations.[6] While this is not meant to imply that exceeding the speed limit during ambulance transportation is always unnecessary, it does indicate that caution and discretion should be exercised in determining whether or not speed is actually essential, keeping in mind the safety risk involved to the motoring public, the emergency medical technicians, and the victim.

(D) AGENCY POLICY-MAKING

As emergency units travel to an incident, the chances of their being involved in a crash greatly increase, particularly at intersections. Agency policy should address the method of proceeding through red lights or stop signs. It is recommended that the safest way to proceed through an intersection in which the red light or stop sign must be violated is to stop, obeying the traffic control device, and then proceed with extreme caution.

Areas which should be given serious consideration for policy statements by the agencies represented by the student body include:

--Specific definition of an emergency.

--Use of headlights (high to low beam alteration or constant).

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[6] "Emergency Driving; Traffic Control; Vehicle Maintenance," Emergency, GHP Publications, Encinitas, California, February, 1975, p. 100.

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- Use of audible and visual emergency equipment (to be used separately or simultaneously).
- Qualifications of the driver.
- Routes to be followed.
- Hospital selection (closest or patient request).
- Police escorts.
- Siren selection (intersections versus straightaway).
- Position of window in order to hear other approaching vehicles with sirens.
- Speed (recommended to be limited at or slightly above the posted speed).
- Movements contrary to traffic control devices (red light, stop signs, one-way streets, no-turn intersections).
- Emergency passing procedures.
- Travel in opposite traffic lane.
- Procedures to follow if involved in an accident.

f course, policies are merely guidelines, designed to
ructure, not replace, individual discretion. As such,
licy determinations can never hope to cover every con-
ivable application, but they can offer a framework for
tion to assist emergency medical technicians in making
stantaneous, on-the-spot decisions which will not be
gretted in retrospect.

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(E) RESPONSIBILITIES TO THE PUBLIC

To many of those involved in accidents, the most frightening part of the incident was not the crash itself, but the ride to the hospital in the ambulance.[7] It is the task of the department, squad, or company to eliminate this fear through proper training of drivers.

Emergency medical services maintain dual responsibilities, both to the victim and to the motoring public. Recognition of and adherence to these obligations will greatly assist in improving the public image of the EMS organization.

Abuse of the privilege to violate traffic laws in emergency situations is extremely serious. It is the duty of the EMS administrator to ensure that written departmental policy clearly describes what constitutes a "true" emergency and the appropriate method to use in responding to such a situation so that the dual obligations of properly caring for the victim and safely maneuvering through traffic are met.

Legal regulations which provide special privileges to emergency vehicles must be used with discretion and caution. Taking undue advantage of these privileges through overuse may demand a thorough study of the usefulness of special laws for emergency vehicles, in light of the potential hazards created by such immunities.

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[7] American Academy of Orthopaedic Surgeons, Emergency Care and Transportation of the Sick and Injured (Menasha, Wisconsin: George Banta Company, Inc., 1971), p. 255.

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(F) SKILL DEVELOPMENT--VEHICLE OPERATION

This section of the manual is designed to be used on the driving range, with instructors first demonstrating proper execution of the maneuvers, and then testing the students' ability to perform them. The most important item to keep in mind throughout the on-range portion of the training is safety. This cannot be stressed too much or repeated too often.

Learning the skill of driving a car is very similar to learning the skill of riding a bicycle. The first time a person sits on a bike seat, he does not immediately begin to ride. It takes time to develop balance, to learn capabilities and limitations of the bike, and become confident. If one wants to advance from recreational bike-riding to professional cycling and racing, new, more sophisticated skills must be learned and practiced. So it is with driving a car. Most students can drive a motor vehicle, but now they must learn new skills and develop new attitudes to assist them in becoming more proficient in the driving task as it applies to emergency vehicle operation.

There is a distinct difference between reaction under normal driving conditions and reaction with a siren operating overhead, emergency lights flashing, and two-way radio conversation on-going. With high levels of adrenalin being pumped throughout the driver's system, it is easy to get caught-up in the excitement of the chase or the emergency run.

The student must learn to operate an emergency vehicle safely under the full impact of these tense conditions, maintaining personal control over emergency conditions in all situations and at all times. The experiences provided during the on-range portion of the training will assist the operator in accomplishing this difficult task.

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(1) Student Assignments and Criteria for Evaluation

The most effective instructor/student ratio for this type of course is one instructor for every three students. This allows the instructors to become familiar with each student's driving capabilities and personal driving problems. As the instructor is assisting the one student behind the wheel, the other two are in the vehicle observing. Riding as an observer is important in order to enable the student to become familiar with the course and also to assist the driver if required. Having four individuals in a vehicle is comfortable and assists greatly in weight distribution.

Ideally, the physical layout of the course should enable at least three groups to use a particular area of the range without interfering with each other, but existing conditions may alter this. Facilities must be adequate enough to properly conduct the exercise, and too many maneuvers should not be conducted on a facility with insufficient space.

A sample evaluation form is included in the Appendix of this manual. It should be explained to students prior to beginning the behind-the-wheel phase of the program (preferably during the review of skill exercises to be discussed). The evaluation form will be essential to determining the progress of each student and will also be helpful in pointing out areas where each is weak.

(2) Review of Pre-driving Habits

If safe driving is to be accomplished under normal situations, and especially under emergency conditions, the driver must be comfortably and securely seated and must be familiar with the vehicle's interior and instrument locations.

The seat should be positioned as far back as leg length will allow while still being able to operate the foot controls. There will be no left foot braking; therefore, the left foot should be securely stationed on the floor board for stabilization of the body. In this position, the thighs should be resting on the seat, and the knees should be slightly flexed. The seat should be adjusted until this position is achieved, making sure that the seat is locked into position. The seat position can be checked by placing the hands at the nine and three o'clock position on the steering wheel--this seat position must not be cramped. Position is important for being able to steer quickly, arms extended, moving the elbows away from the body. This balanced hand position will enable the driver to make turns of the steering wheel in the shortest possible time.[8]

When approaching a curve, rather than changing hand position in the curve, hands should be placed on the steering wheel prior to beginning turning movement. Without having arms overlapped or crossed, the driver is better able to control the vehicle in the curve. Should additional turning be necessary, one hand can merely be released and the wheel re-grasped at the position which will give the required amount of turning degrees.

The driver of any emergency vehicle should be so familiar with the interior switches and instrument panel that only one quick glance at the desired switch or dial can provide the necessary visual input to maneuver a switch or receive the required data from a gague. Emergency driving situations are neither the time nor the place to be learning the vehicle's interior instrument panel. This knowledge must be committed to memory prior to any actual driving.

During the upcoming on-range exercises, the following safety measures must be adhered to:

- At any time that the vehicle is stopped on the driving range, emergency flashers will be operating.
- In all situations in which the driver is out of the vehicle, the emergency brake will be applied.
- At any time that the driver is out of the vehicle, the driver's door will be closed.

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[8] Evasive and Emergency Curriculum for Driver Education (Carbondale, Illinois: Safety Center, Southern Illinois University, 1974), p. 11.

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- Any backing maneuver will be preceded by the sound of the horn.
- Any use of the radio will require strict radio procedures, and at the completion of any and all transmissions, the hand microphone will be secured in its proper position.
- The use of seat belts will be required at all times when the vehicle is in operation. During Phase II (Specialized Maneuvers) and Phase III (Emergency Vehicle Operation), shoulder harnesses will be worn in addition to the seat belt and crash helmet.

(3) Instructor Demonstrations

Prior to the students performing driving exercises, each instructor will conduct assigned students through each exercise, explaining vehicle position and correct procedures for execution of the exercise. Demonstrations should be models of expert performance, carried out at slow speeds, and accompanied by comments pointing out the critical elements of performance. Demonstrations of complex maneuvers and techniques should be simplified, emphasizing only the most critical aspects of performance.

(4) Behind-the-wheel Exercises and Observation

STRESS SAFETY!

Realizing that physical facilities will vary, it is highly recommended that the physical layout of the course be designed to enable at least three groups to be performing different driving exercises simultaneously, with groups rotating from one exercise to the next simply and systematically. If an exercise cannot be conducted properly with minimal risk, it should be discontinued.

In consideration of the limited amount of time for in-car instruction, it is suggested that the instructors organize

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and conduct range instruction so that maximum time is provided for student practice. Also, valuable range time should not be consumed by covering material that can be dealt with effectively in the classroom, as homework, or during observation time.

In addition, the following instruction guides should be kept in mind, in view of the problem of teaching in an inherently dangerous environment:

- Never expose students to unreasonable risk of harm.
- Be alert to the emotional strain that can affect the performance of both students and instructors.
- Make an effort to identify students who approach the driving task with considerable fear and anxiety, treating them accordingly.
- Keep records of the driving performance of each student during each practice period.
- Conduct occasional individual student/instructor conferences to discuss the student's performance and plan for improvement.
- Use independent study assignments.
- Select teaching methods that are most appropriate for the specific content being discussed.
- Be prepared to adjust the amount of practice time spent on each skill to suit the individual learning capacities of each student.
- Provide the student with sufficient practice on each skill to enable correct performance on several successive trials.
- Periodically check to determine whether skills learned earlier have been retained, and when necessary, provide additional practice.
- Require the student to practice fundamental skills until they are mastered well enough to permit efficient progress to more advanced skills.

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- Avoid continuous and repetitive practice of the same skill in order to avoid loss of student motivation.
- In planning for the practice of most driving skills, provide for initial mass practice, followed by subsequent distributed practice.
- Develop and practice a clear, concise technique for giving directions.
- Give directions well in advance to permit the student to get mentally and physically ready to perform.
- At appropriate times, provide students with the opportunity to direct their own driving.
- Verbal cues should be provided only when necessary to help the student perform correctly.
- Be ready to use verbal cues during the student's initial performance of complex skills, when a student tends to repeat a specific error, in difficult traffic situations, and in other comparable circumstances.
- Recognize that the need for verbal cues diminishes as the student's driving proficiency increases.
- Be in a position to observe all important elements of student performance, including those not reflected in the movement of the vehicle.
- Thoroughly analyze all aspects of the student's performance to determine the underlying cause of improper performance.
- Clearly identify errors of which the student is unaware.
- In most cases, verbal feedback should be immediate and precise.
- Limit the amount of feedback in terms of the student's capabilities for using it.
- Indicate the appropriate corrective action as part of the feedback process.
- Provide an immediate opportunity to correct errors by performing the skill again.

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- Whenever appropriate, verbally reinforce corrected performance.
- Develop special methods designed to cope with special problems.
- Assess the student's progress in relation to the objectives and content of the course.
- Use the test to determine strengths and weaknesses and plan further improvement.
- Take all possible precautions to ensure the objectivity of the test.
- Group students homogeneously for in-car instruction.
- Use a variety of techniques to enhance the value of student observation time.

(5) Commentary Driving

The purpose of emergency vehicle operator's training is to teach new principles and correct any inappropriate driving habits which the student may have. When placed in the controlled situation of a driving school, people will temporarily change habits to conform with the expectations of the instructor. However, commentary driving is an exercise in which both the positive and negative aspects of a person's driving surface.

This portion of the training program is conducted on the open road in a nearby locality. Each instructor will demonstrate to the students the method in which the exercise is to be performed. It will be explained that each student will drive exactly as if he were alone. The exercise requires the driver to verbalize all that is seen and all actions performed.

Each student will drive for approximately 15-20 minutes with the instructor in the passenger seat. The instructor will mention the driving time and will take notes, but this should not distract the student. Notes are taken on both positive and negative driving habits and are recorded for the student's personal evaluation.

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A typical narrative during commentary driving might be as follows: "I am placing my hand on the door handle; I am opening the door; I am sitting down now to adjust the seat, the mirror, buckle seat belts. I place the key in the ignition, start the vehicle, release the emergency brake, place in gear. I am turning my head to the rear to check for any vehicle; turn again to the front; I am rechecking the rear by mirror; I place turn signal on; accelerate into lane of travel. I see a red car approaching; I am passing a 'speed 45 mph' sign. . ."

This exercise and verbalization, while perhaps appearing trivial, actually assist the instructor in knowing what the student is perceiving as the driving task progresses. The student will often omit very important situations which should have been observed or will perform some habit which is annoying or disturbing to other drivers, such as forgetting to signal or omitting use of the mirror.

This portion of the training should not be eliminated, as the instructor must be aware of any inappropriate driving habits in order to correct them as the training proceeds.

(6) Review of Skill Exercises

Prior to physically operating a vehicle on the driving range, the student should be familiarized verbally and through instructor demonstrations with each maneuver contained in the following three areas of skill development:

--Phase I, Defensive Driving
--Phase II, Specialized Maneuvers
--Phase III, Emergency Vehicle Operation.

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(a) Phase I, Defensive Driving

This type of driving creates for the vehicle operator a condition of maximized safety. The various aspects of defensive driving instruction discussed herein will assist the driver in refining those skills necessary to operate a vehicle under normal, non-emergency circumstances.

All of the defensive driving skills described throughout this section have two major objectives:

--To present similar situations which will be encountered in normal, everyday driving and to provide the opportunity to practice solutions to those situations on a driving range before they are actually encountered on the road.

--To prepare for the Specialized Maneuvers and Emergency Vehicle Operation segments of the skill development phase of EVOC training.

In addition to the skills learned, the added pressure of the exercises being timed and penalties for cones being dislodged increase tension. This pressure and tension are in preparation for the pressure and tension experienced during the pursuit and emergency runs which will be made in Phases II and III of the program and in real life on the job.

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- OFFSET ALLEY (See Exhibit #C-1)

Since emergency medical technicians must drive in very unusual locations, they must be able to maneuver a vehicle into and out of tight situations. This exercise will provide practical experience in the development of such skills.

The driver enters a lane in a forward motion, proceeds through the lane, and comes to a stop in eight (8) seconds or less. Upon signal, the driver will back out of the lane to the starting point in twelve (12) seconds or less, remembering to use the horn to signal all backing maneuvers.

When the student performs this exercise, some common problems which the instructor should be alert to during forward motion include:

--Improper approach position.

--Improper position through alley.

--Improper position at end of forward movement.

During reverse motion, common student problems include:

--Improper position through alley.

--Remembering that when in reverse, the front turning wheels will swing wide on corners.

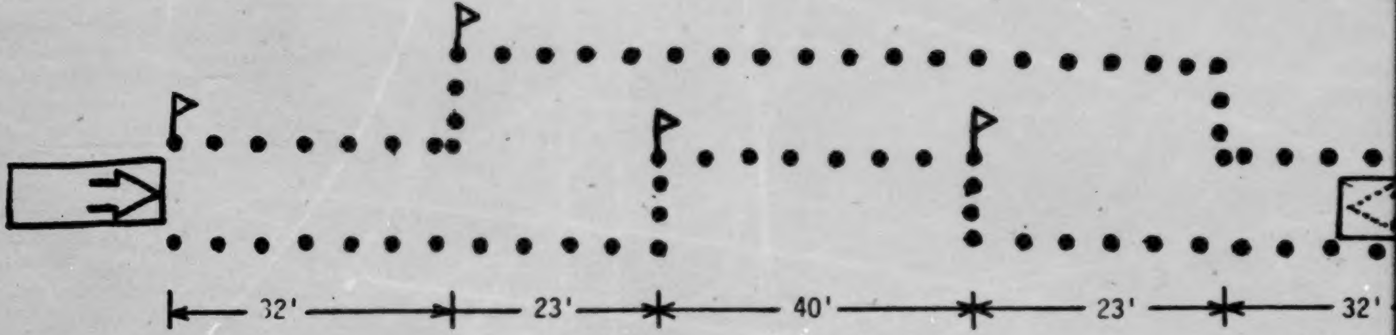
--Hand position. (Left hand should be on top of the steering wheel, with right hand merely used as a steadying agent on the wheel, not grasping it. When in reverse, the vehicle's front end has a tendency to be very unsteady, but appropriate hand position will stabilize it).

--Failure to use mirrors.

The student is graded on steering control (number of cones hit), throttle control, time, and smoothness.

EXHIBIT #C-1

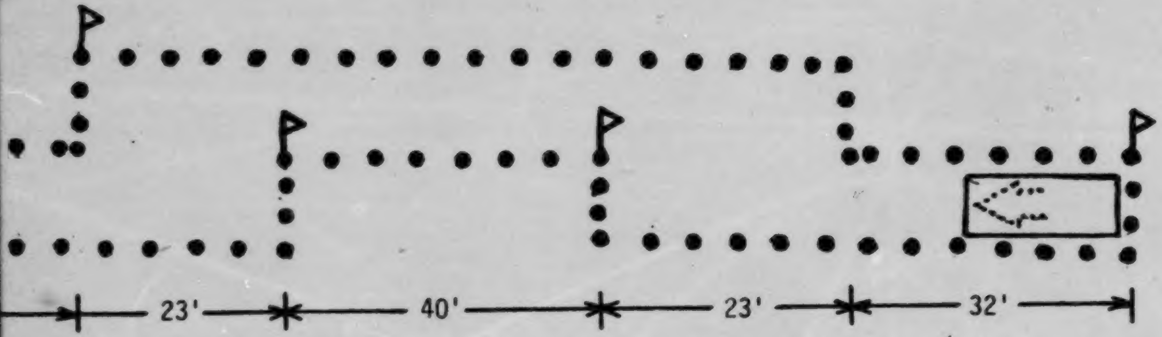
OFFSET ALLEY


32'
23'
40'
23'
32'

Lane width: Vehicle plus two feet

EXHIBIT #C-1

OFFSET ALLEY



Lane width: Vehicle plus two feet

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- TURN-AROUND MANEUVER (See Exhibit #C-2)

Upon receiving an emergency call or viewing a serious traffic accident, the emergency medical technician must be able to turn around rapidly and safely in order to respond to the call. Skill developed through this exercise will enable the driver to meet that demand.

This exercise must be completed in sixty (60) seconds. Time begins when the driver touches the closed vehicle door handle. Beginning from outside the vehicle, the operator continues in the following manner:

--Enter vehicle, attach seat belt, release emergency brake, place gear shift into "drive" position, and proceed to driveway #1 on the left side at the far end of the exercise.

--Enter driveway #1 nose first, and back out, remembering to use the horn to signal all backing maneuvers.

--Proceed to a position such that entrance to driveway #2 at the near end of the course can be made in a backing exercise, remembering to use the horn.

--Leave driveway #2 to a position near driveway #1 such that it can be entered in a backing maneuver.

--Upon completion of backward motion into driveway #1, exit the driveway and proceed to the starting point of the course for completion of the exercise.

When the student performs this exercise, some common problems which the instructor should be alert to include:

--Getting into the vehicle or placing vehicle into drive improperly.

--Not securing seat belt or releasing emergency brake.

NOTES/REFERENCES

--Poor position for entrance into driveways for forward and in reverse.

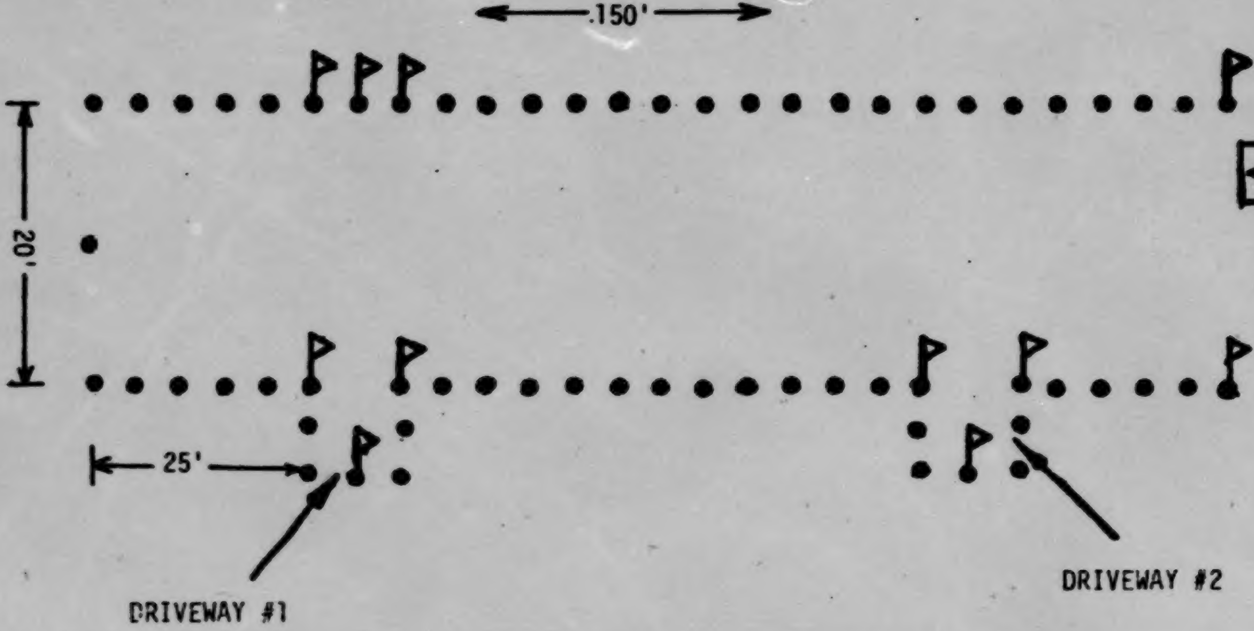
--Driving too deeply into driveways.

--Inadequate judgment in determining where the vehicle is in relation to the cones.

The student will be scored on time, number of cones hit (with a penalty of two seconds for each cone), smoothness, steering forward, steering in reverse, and use of brakes.

EXHIBIT #C-2

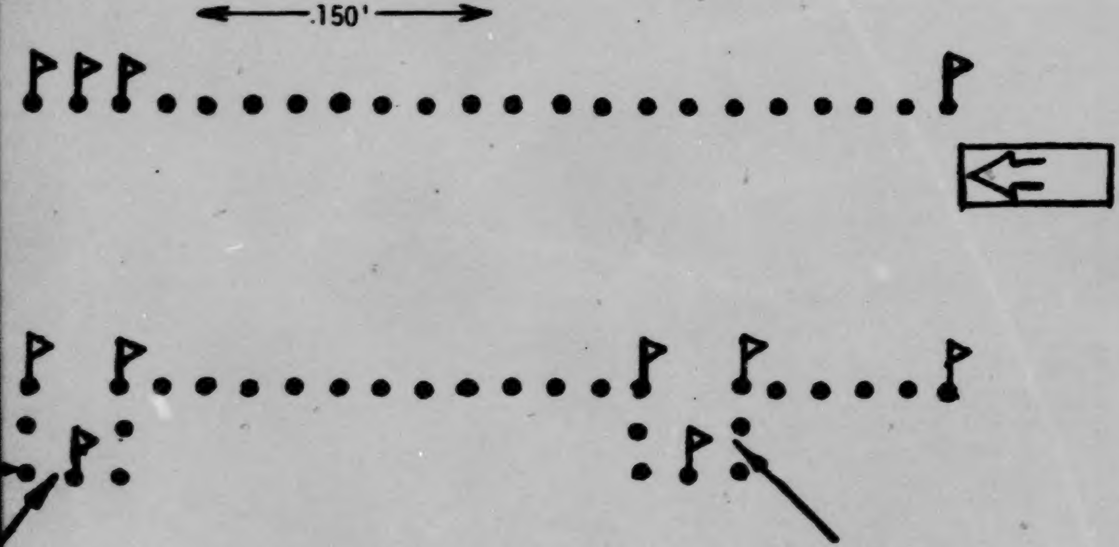
TURN-AROUND MANEUVER


150'
20'
25'
DRIVEWAY #1
DRIVEWAY #2

Driveway dimensions: Width = vehicle plus two feet
Length = fifteen feet

EXHIBIT #C-2

TURN-AROUND MANEUVER


150'

DRIVEWAY #2

iveway dimensions: Width = vehicle plus two feet
Length = fifteen feet

NOTES/REFERENCES

- PARALLEL PARKING (See Exhibit #C-3)

It is essential that drivers develop the skill of parallel parking in order to safely respond to calls for assistance in various locations. It is very embarrassing to an EMS agency when a citizen complains of improper parking of an ambulance, particularly when it is a result of lack of driver skill.

In this exercise, the vehicle must be parallel parked on both the right and the left side of the road, accomplishing both within thirty (30) seconds without knocking over any cones.

Time for this exercise starts when beginning backward motion to park on the right side. The vehicle shall come within eighteen (18) inches of the curb (simulated by cinder blocks if necessary). Entrance and proper position are essential. The vehicle should not be pulled forward, and when parallel parked, the front tires should always be turned to the left for immediate departure of the vehicle.

Upon completion of the right-side parallel parking, the driver proceeds down the course to the left side parallel parking and executes a similar maneuver. When the parking maneuver is completed, the driver will exit the parking stall and cross the finish line for completion of the exercise.

When the student performs this exercise, some common problems which the instructor should watch for include:

--Not knowing when to begin turning movement for entrance into parking stall.

--Not knowing when to counter-steer, once entrance into parking stall has begun.

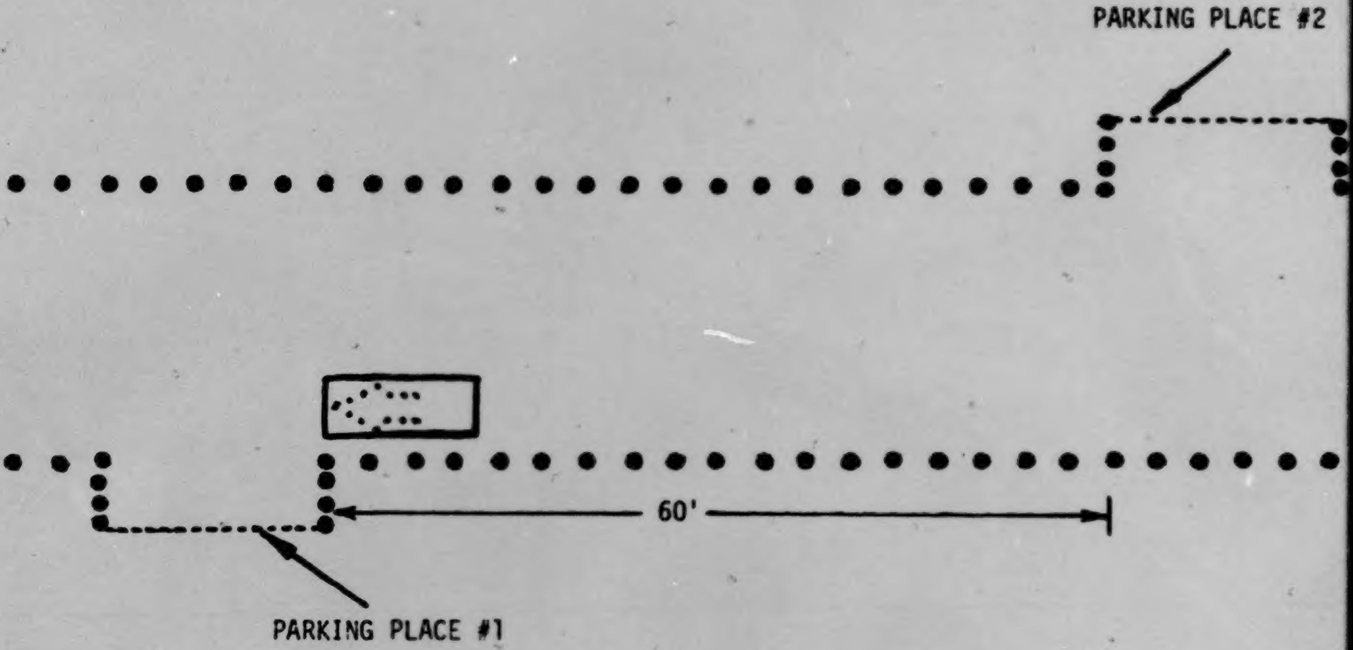
--Improper distance from curb (must be within 18 inches).

--Wanting to pull forward and position vehicle.

Scoring will be based on time, steering control, throttle control, and position.

EXHIBIT #C-3

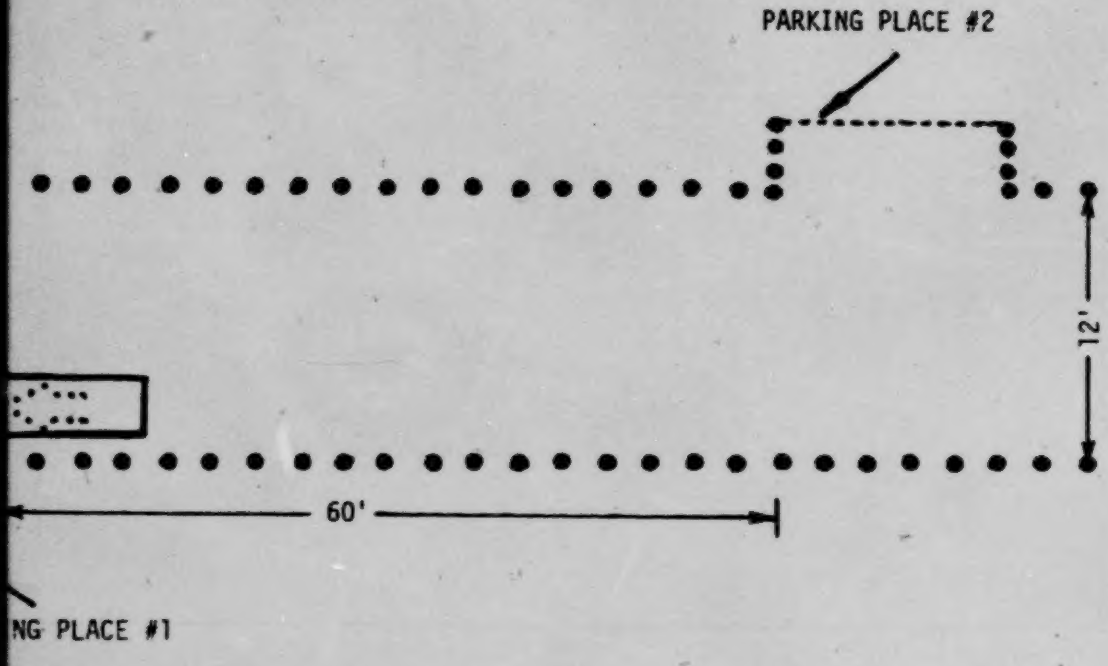
PARALLEL PARKING


PARKING PLACE #2
60'
PARKING PLACE #1

Parking place: Width = eight feet
Length = Vehicle plus four feet

EXHIBIT #C-3

PARALLEL PARKING


PARKING PLACE #2
12'
60'
NG PLACE #1

Parking place: Width = eight feet
Length = Vehicle plus four feet

- DOUBLE LANE CHANGE (See Exhibit #C-4)

As will be further demonstrated in the section of this manual dealing with the Emergency Vehicle Operation phase of EVOC training, proper lane-changing is an essential component. A change of lane to avoid a hazard can be executed more rapidly and safely than an all-wheel skid.

Approaching the exercise at 25 mph, the operator will successfully negotiate the change of lane without dislodging any cones or slowing speed. Radar will be in operation to ensure that a speed of 25 mph is maintained throughout the exercise. Upon the exit of the last lane, the driver will turn around and approach from the opposite direction (entering where exited), and maneuver through the course again, maintaining a constant 25 mph speed.

When the student performs this exercise, some common problems which the instructor should watch for include:

--Improper position of vehicle in relation to cones.

--Tendency to over-steer or under-steer.

--Improper hand position.

--Improper use of brakes.

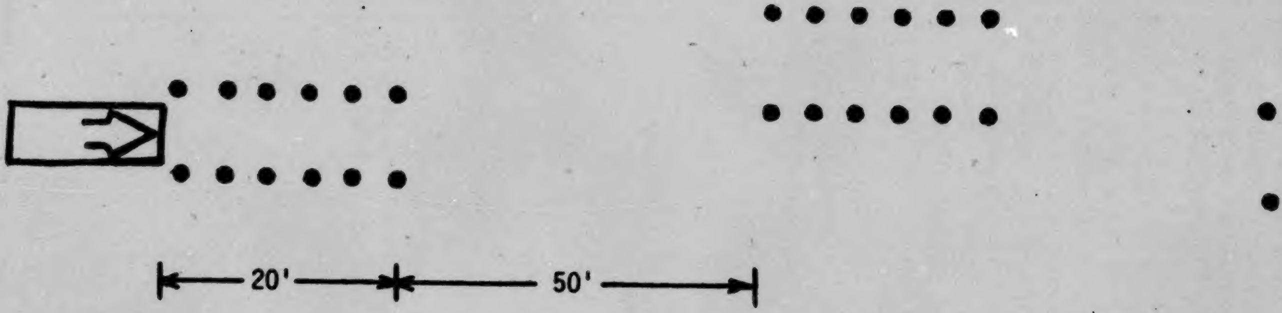
--Slowing of vehicle without use of brakes.

Grading is based on smoothness, throttle control (use of brakes), and steering control. The driver will be penalized for cones dislodged according to the following formula:

0 cones - 100 points
1 cone - 90 points
2 cones - 80 points
3 cones - 70 points
4 cones - fail

EXHIBIT #C-4

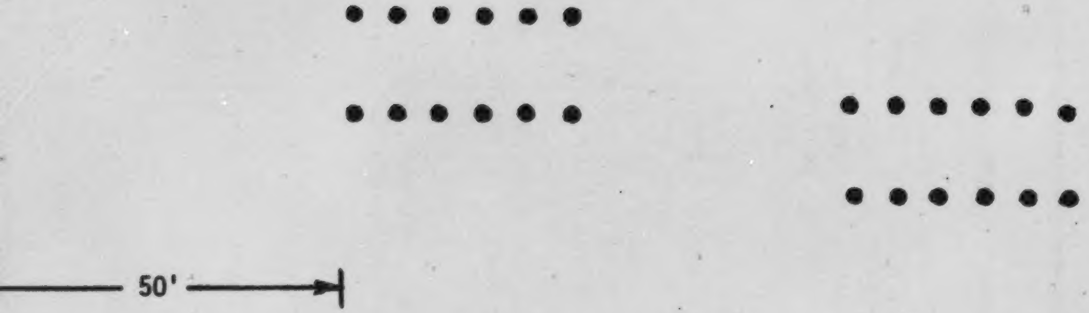
DOUBLE LANE CHANGE



Lane width: Vehicle plus two feet

EXHIBIT #C-4

DOUBLE LANE CHANGE



Lane width: Vehicle plus two feet

- CONE JUDGMENT COURSE (See Exhibits #C-5, C-5-1, C-5-2, and C-5-3)

This series of maneuvers is utilized in order to better develop proper judgment and more precise steering skills.

The course consists of a light bulb turn, a backing exercise, and a "Y" turn. (This is also a timed course, but will be customized to the specific location on which the skill development phase is to be housed, depending upon the conditions which exist at the location).

The light bulb will be entered by the vehicle at a speed comfortable to the driver. As the vehicle progresses around the circle, the distance between the cones will diminish, requiring increasing concentration on the part of the driver. Exiting the light bulb, the operator will proceed to a driveway area and, remembering to sound horn, will back into the coned area. Placing the vehicle into "drive", the operator will exit the driveway and proceed to an area on which a "Y" turn will be performed, then proceeding past the driveway into and through the light bulb. Time will cease when the vehicle passes the starting line.

When the student performs this exercise, some common problems which the instructor should watch for include:

--Excessive speed.

--Improper vehicle position.

--Improper turning movement (light bulb and Y-turn).

--Not deep enough into driveway (backing exercise).

--Improper backing (Y-turn).

The cone judgment course is graded on smoothness, throttle control, steering control, and time.

NOTES/REFERENCES

NOTES/REFERENCES

Cones dislodged from position will be counted according to the following formula:

0 cones - 100 points
1-2 cones - 95 points
3-5 cones - 90 points
6-8 cones - 85 points
9-11 cones - 80 points
12-14 cones - 75 points
15-17 cones - 70 points
18 cones - fail

EXHIBIT #C-5

CONE JUDGMENT COURSE

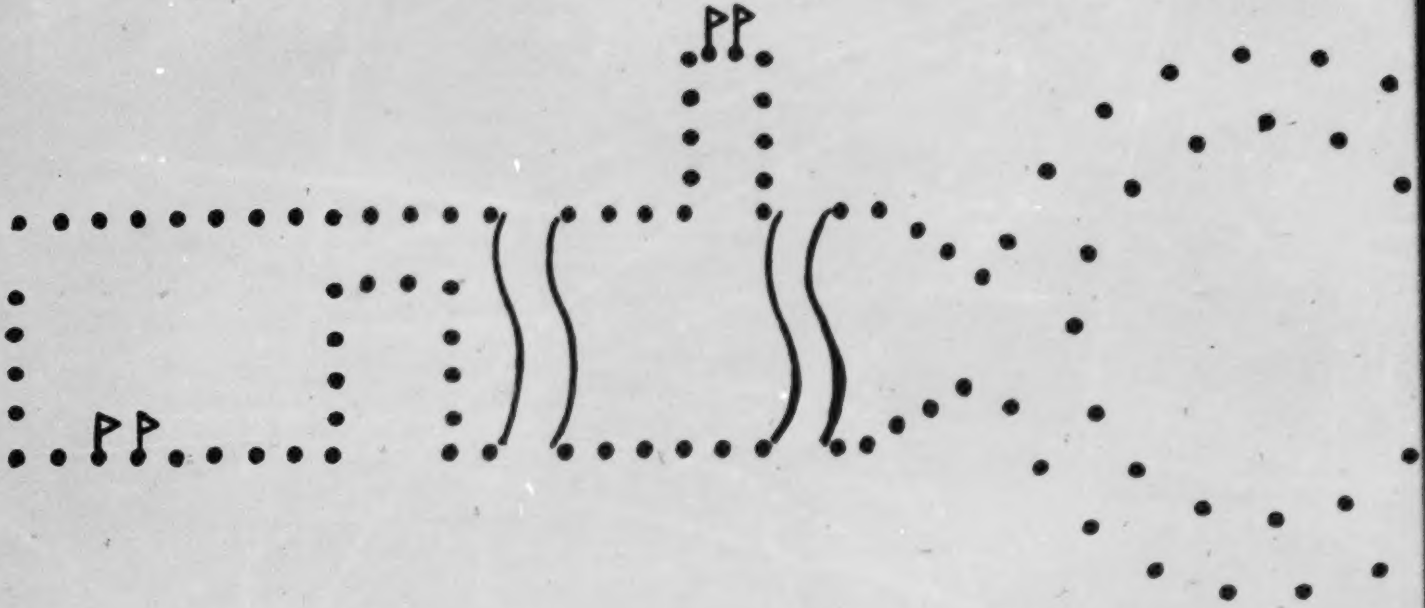


EXHIBIT #C-5

CONE JUDGMENT COURSE

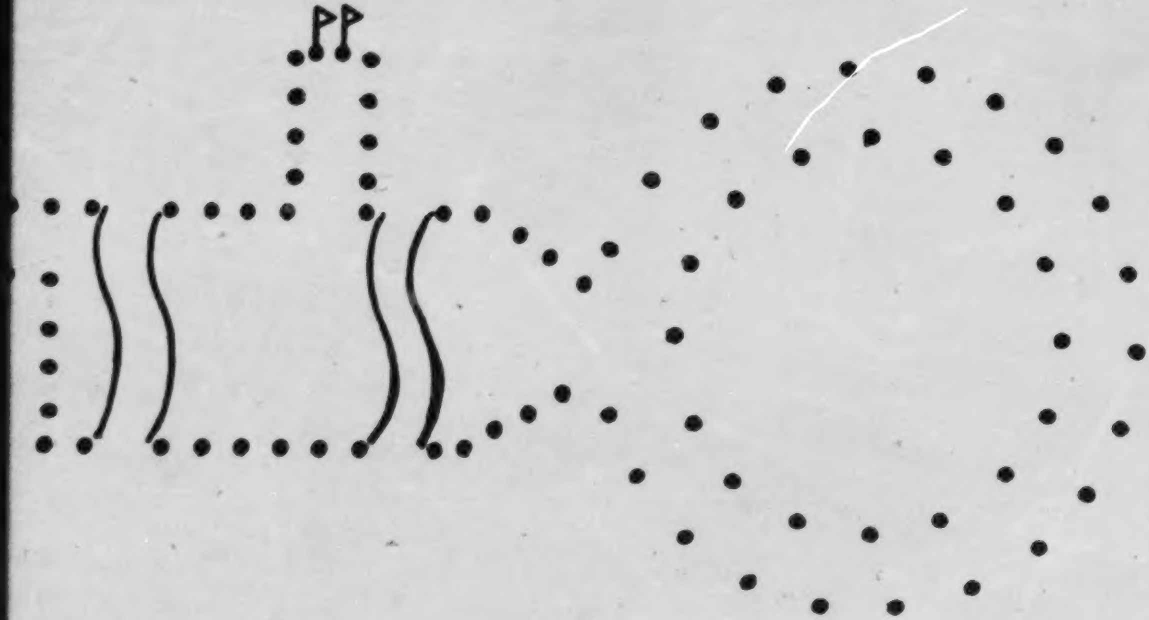
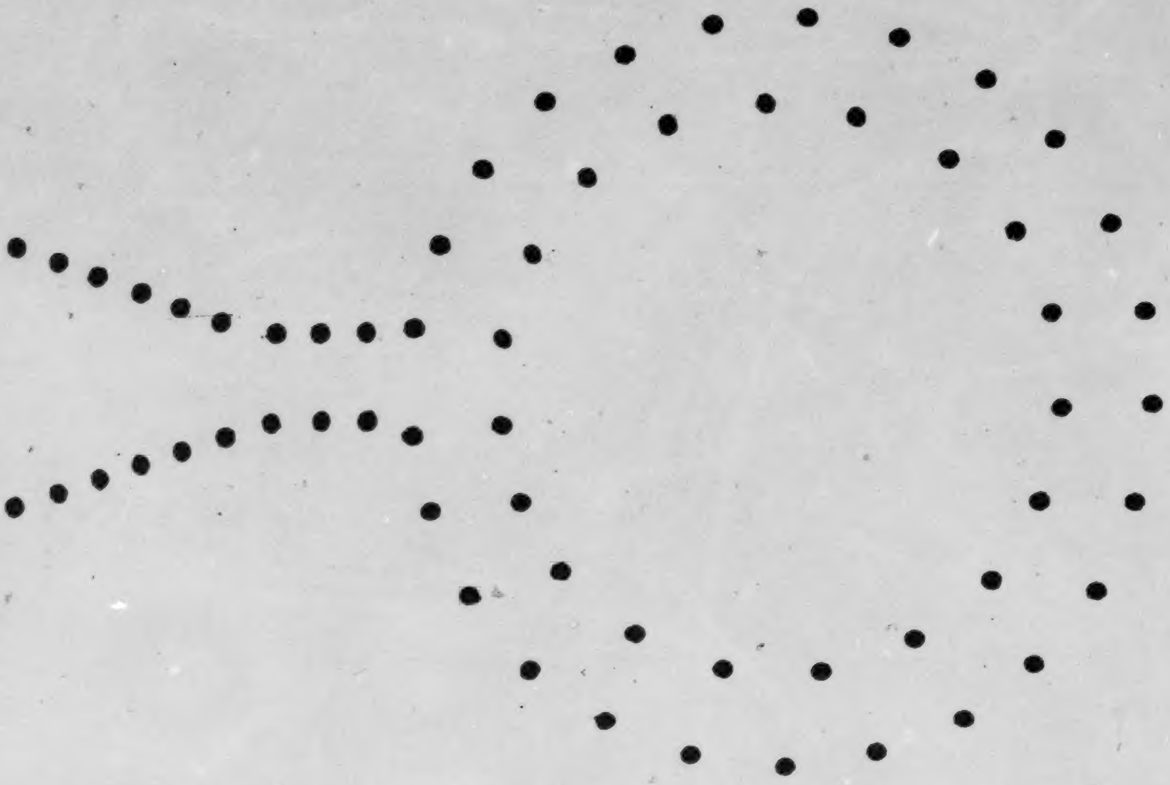


EXHIBIT #C-5-1

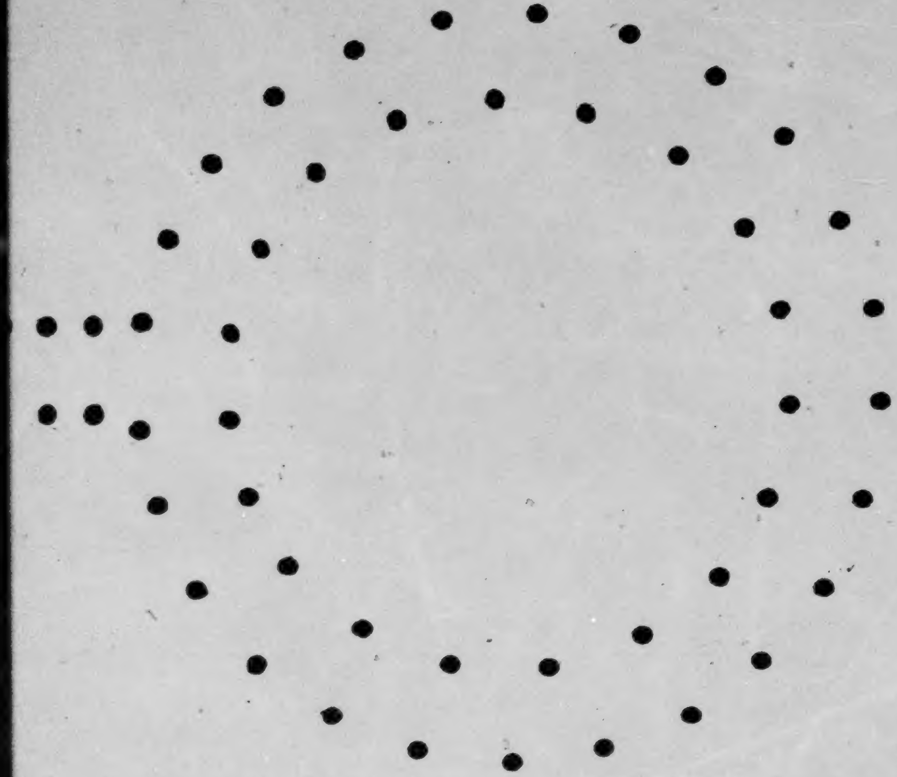
LIGHT BULB



Enter circle to right; cones diminish in width near exit.
Turning radius of test vehicle is radius of circle.

EXHIBIT #C-5-1

LIGHT BULB

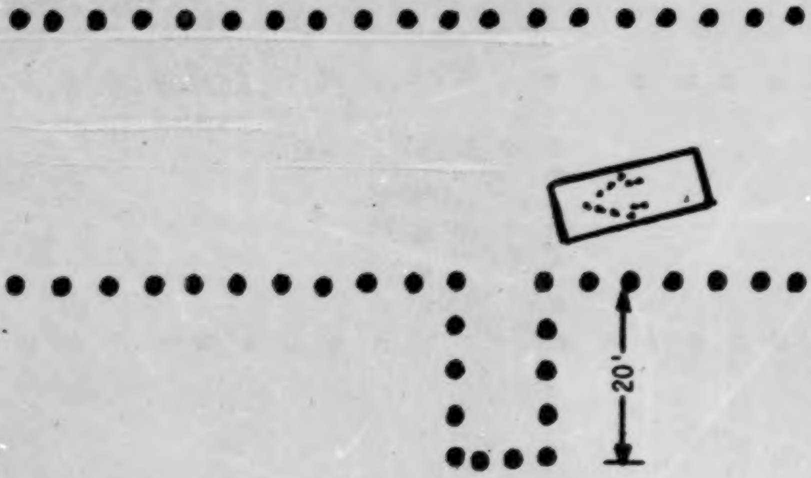


cle to right; cones diminish in width near exit.

g radius of test vehicle is radius of circle.

EXHIBIT #C-5-2

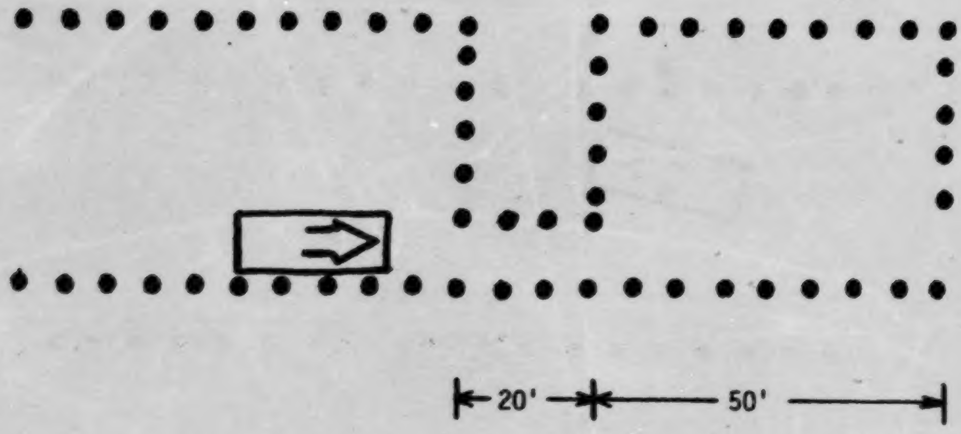
BACKING MANEUVER



Driveway width: Vehicle plus two feet

EXHIBIT #C-5-3

TURN-AROUND MANEUVER



Entry lane dimensions: Vehicle plus eighteen inches

NOTES/REFERENCES

(b) Phase II, Specialized Maneuvers

These exercises are simulations of actual driving hazards encountered every day. The defensive driving skills learned in Phase I are preparatory for this segment of the training, which, in turn, is essential to Phase III, Emergency Vehicle Operation.

The speeds during this portion will increase to a maximum of 40 mph. While that speed may not seem very fast, under the conditions which will be present during the exercise, 40 mph will appear excessive to the driver.

Again, the instructor will first explain and demonstrate each maneuver. As in all phases of this program, safety is to be stressed and demanded. Any unacceptable or dangerous behavior will be grounds for immediate dismissal from the program.

- SERPENTINE (See Exhibit #C-6)

The serpentine is designed to develop the driver's ability to keep a vehicle under control during heavy and sudden weight changes. The importance of proper hand position, body position, and speed control will become apparent during this exercise. The effects of under-steering and over-steering are also demonstrated.

The driver will become familiar with the serpentine after making practice runs and will then make three (3) test runs at 30, 35, and 40 mph respectively. The speed is checked by radar, and communication with the driver is maintained.

The exercise consists of a series of cones placed in a straight line at measured distances apart. The driver is to enter the course at the respective speed with the first cone on the left side of the vehicle, the second cone on the right side of the vehicle, the third cone on the left side, and so on, continuing to alternate sides, thus weaving through the serpentine at a constant speed. Any slowing or braking action should be immediately brought to the operator's attention via the radio, and the condition corrected.

When the student performs this exercise, some common problems which the instructor should be alert to include:

--Indecision upon approach of first cone.

--Failure to maintain speed.

--Improper hand position.

--Over-steering vehicle, causing greater weight change and eventual spin-out.

--Improper vehicle position in relation to cones.

The student will be graded on speed--whether too fast or too slow, (refer to the grading chart in Appendix A), number of cones hit, (penalty of five points for each cone), and smoothness.

EXHIBIT #C-6

SERPENTINE

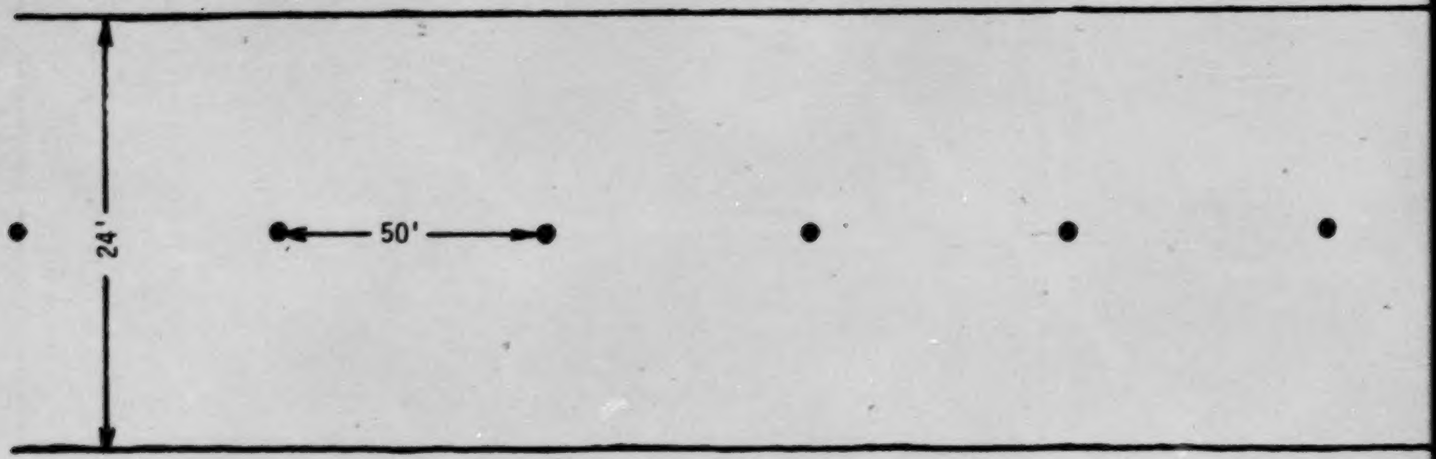
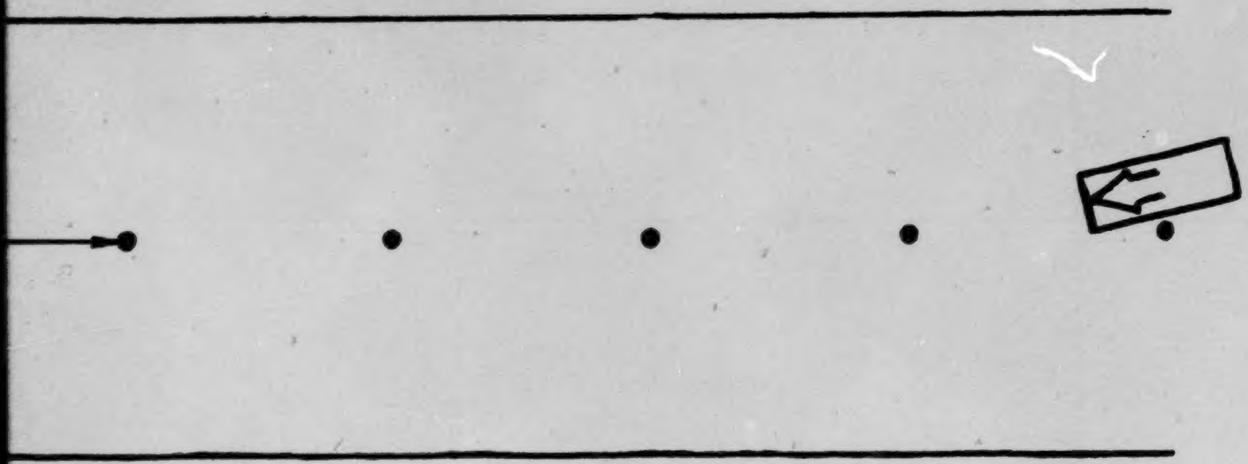


EXHIBIT #C-6

SERPENTINE



NOTES/REFERE

- **REACTION COURSE (See Exhibit #C-7)**

In everyday driving, emergency situations arise, and how the driver copes with these situations is critical. The reaction course was developed to assist the operator in becoming familiar with personal limitations as well as capabilities. Skills learned during the serpentine are used in this exercise.

A signal, (either a normal traffic light or a flag regulated by an instructor), is approached at a speed of 30 mph (maintained by radar). Predetermined signals or colors are given to represent a left turn, right turn, or stop. (For example, green could be designated to mean turn right, yellow to mean turn left, and red to indicate stop).

When a signal is given, the driver must react correctly and maneuver the vehicle through the correct lane without dislodging any cones. This exercise is also run at 35 and 40 mph, with the graded speed being 40 mph. The student then has three (3) opportunities to become familiar with the exercise.

When the student performs this maneuver, some common problems which the instructor should watch for include:

--Improper speed.

--Failure to anticipate signal.

--Wrong reaction.

--Jerky movements.

--Improper hand position.

--Improper use of brakes; possible loss of steering.

--Over-steering; spinning-out.

--Concentration on signal.

--Committed to one lane and attempting to move to
  another, causing spin-out.

This exercise will be graded on the basis of speed--whether too fast or too slow, cones hit (2 points for each cone), anticipation, control, and smoothness.

EXHIBIT #C-7

REACTION COURSE

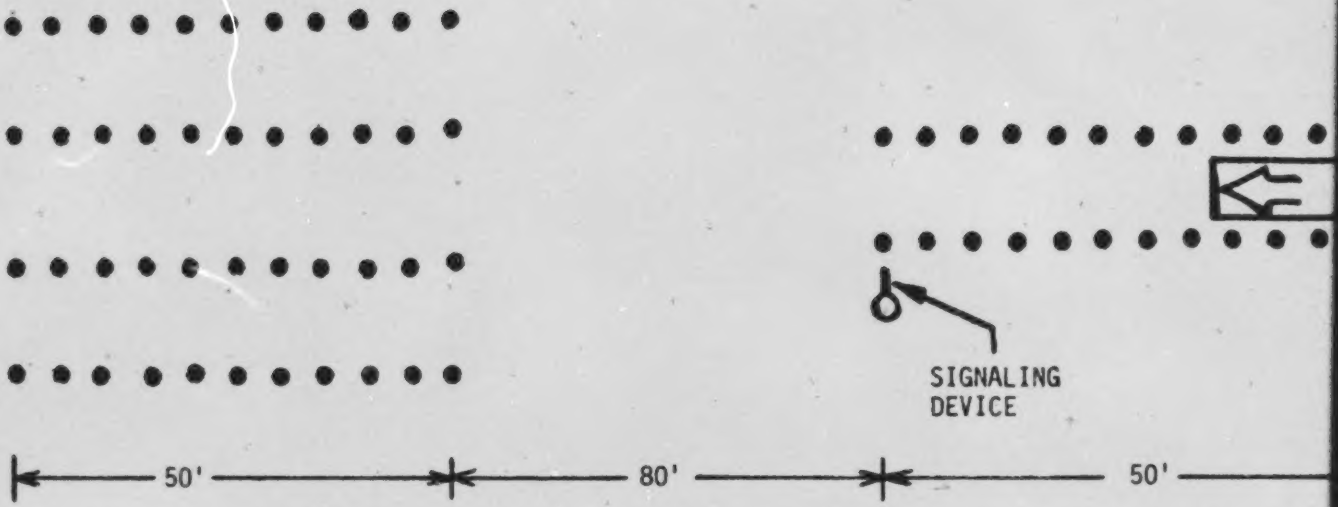
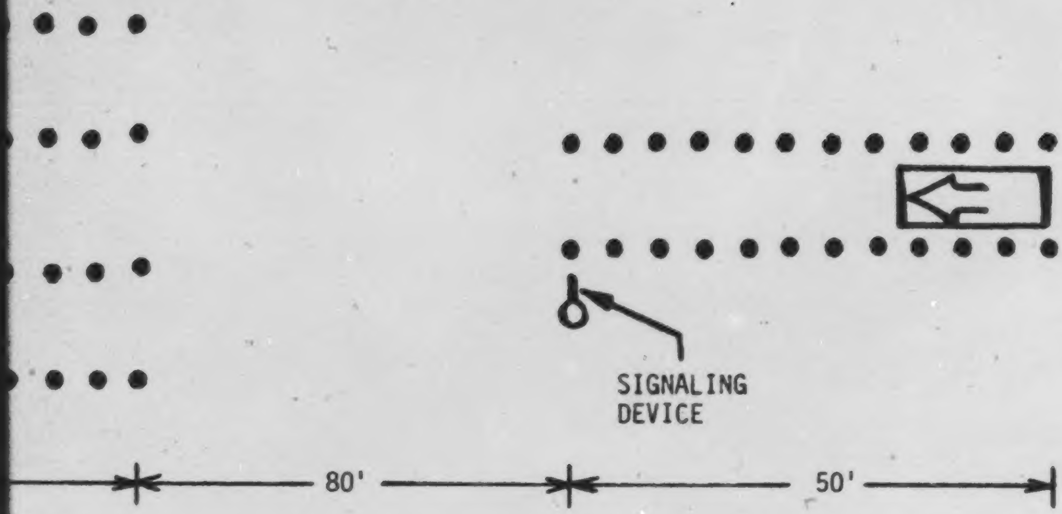

SIGNALING DEVICE
50'
80'
50'

EXHIBIT #C-7

REACTION COURSE


SIGNALING DEVICE
80'
50'

NOTES/REFERENCES

- CONTROLLED BRAKING (See Exhibit #C-8)

Once a vehicle begins to slide (all wheels locked), the driver has absolutely no control over the steering mechanism. Although the steering wheel can be turned the full range both left and right, when the front tires are locked, this will not affect the direction of the vehicle. It is therefore vital that an EMS technician be properly trained in brake application and the effect it has on a vehicle.

In this exercise, a coned lane will be approached at a pre-determined speed (25-35 mph). At a given point in the lane, the driver will be instructed to stop. The vehicle must be stopped without sliding the tires, while at the same time driving around a cone barricade placed within the lane.

When the student performs this exercise, some common problems which the instructor should be alert to include:

--Complete brake lock-up and loss of control.

--Improper hand position.

--Anticipation of and premature application of brake.

--Failure to return to right lane.

--Complete stop not encountered.

--Over-steering; hitting barricade.

This exercise will be graded on braking action, steering control, and smoothness.

NOTES/REFERENCES

- **CONTROLLED BRAKING** (See Exhibit #C-8)

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--Improper hand position.

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--Failure to return to right lane.

--Complete stop not encountered.

--Over-steering; hitting barricade.

This exercise will be graded on braking action, steering control, and smoothness.

EXHIBIT #C-8

CONTROLLED BRAKING

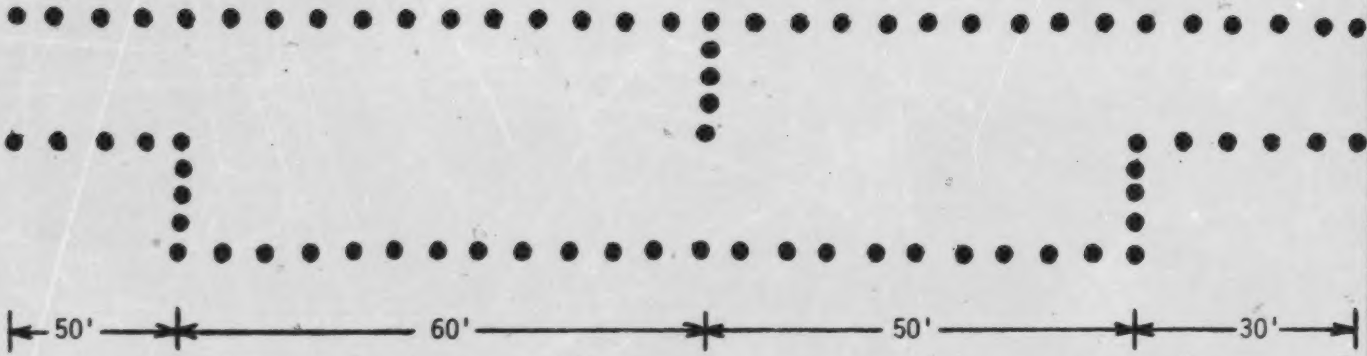
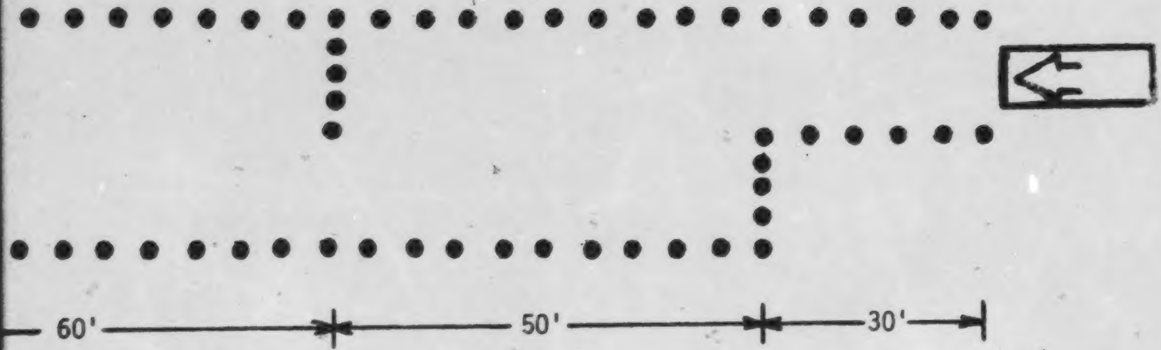


EXHIBIT #C-8

CONTROLLED BRAKING



NOTES/REFERENCE

(c) Phase III, Emergency Vehicle Operation

The Emergency Vehicle Operation phase is designed to provide the student with the opportunity to demonstrate and practice the skills learned up to this point in the course.

The actual physical layout of the course on which this phase of the training will be conducted depends entirely on the local facilities. (See Exhibits #C-9, C-9-1, C-9-2, and C-9-3 for illustrations of suggested layouts on an oblong, rectangular, square, or parking lot facility). This phase will be eliminated from the training if the physical environment is such that the safety of the students and equipment cannot be maintained and guaranteed.

Although an exact course layout to be used at all facilities is impossible to develop because of the variety of physical characteristics of the sites expected to be used during implementation of EVOC training throughout Virginia, it is recommended that certain maneuvers be included in this portion of the training:

--A 180° turn.

--An "S" maneuver.

--Width judgment at accelerated speed.

--Controlled braking.

As mentioned earlier, many patients have more fearful recollections about their safety enroute to the hospital than over the injury caused in the accident. Thus, the person on the stretcher is an excellent resource for judging the driver's ability to operate the vehicle. With this in mind, as part of the final evaluation of each driver, one student will be transported on a gurney in the rear of the ambulance during the actual exercise. This will enable the student victim to both evaluate a classmate and better appreciate the apprehensions of a real victim. As part of this evaluation, the driver will be expected to bring the ambulance to a rapid stop without final vehicle dipping.

NOTES/REFERENCES

When the student performs these exercises, some common problems which the instructor should be alert to include:

--Failure to perform pre-driving habits.

--Improper hand position.

--Improper vehicle position and approach to curve.

--Too fast or too slow speed.

--Inadequate apex on curves.

--Early or late speed from curves.

--Inappropriate braking techniques (too much; too late; left foot).

--Inadequate control of vehicle.

--Lack of confidence.

--Incomplete physical control of self.

The student will be graded on vehicle operation, hand position, road position, braking techniques, speed into curve, apex on curves, and speed exiting curves.

EXHIBIT #C-9

EMERGENCY VEHICLE OPERATION:
SUGGESTED LAYOUT FOR AN OBLONG PHYSICAL FACILITY

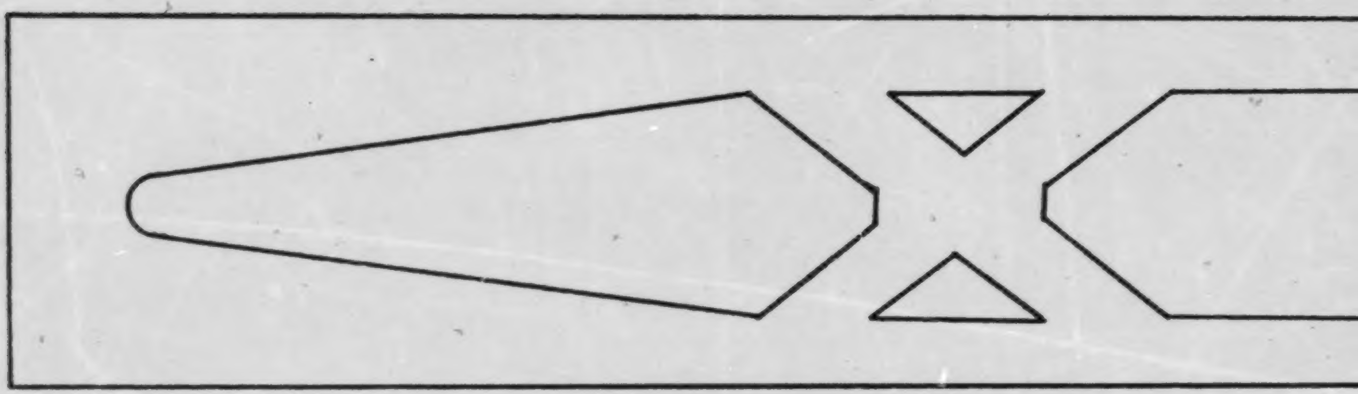


EXHIBIT #C-9

EMERGENCY VEHICLE OPERATION:
SUGGESTED LAYOUT FOR AN OBLONG PHYSICAL FACILITY

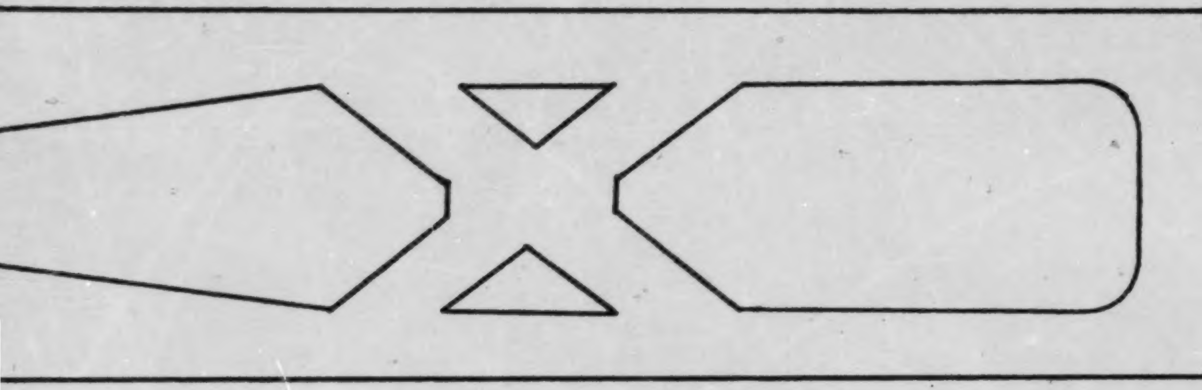


EXHIBIT #C-9

EMERGENCY VEHICLE OPERATION:
SUGGESTED LAYOUT FOR AN OBLONG PHYSICAL FACILITY

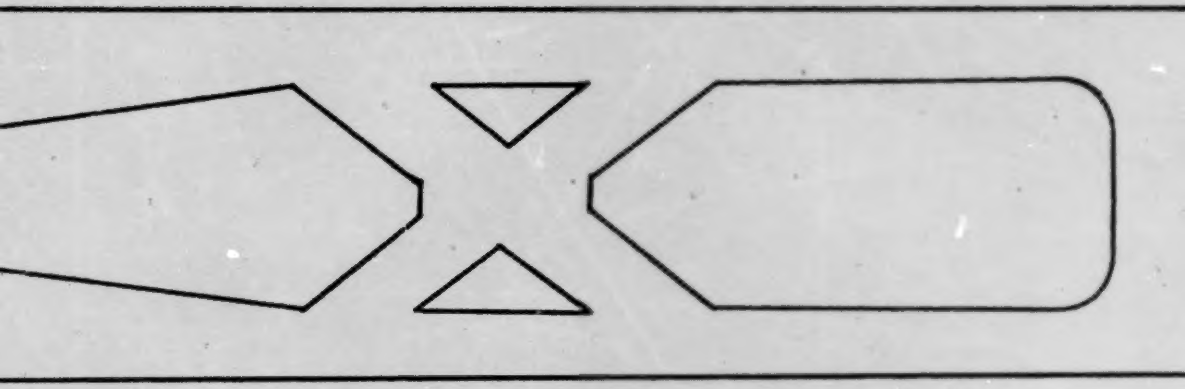


EXHIBIT #C-9-1

EMERGENCY VEHICLE OPERATION:
SUGGESTED LAYOUT FOR A RECTANGULAR PHYSICAL FACILITY

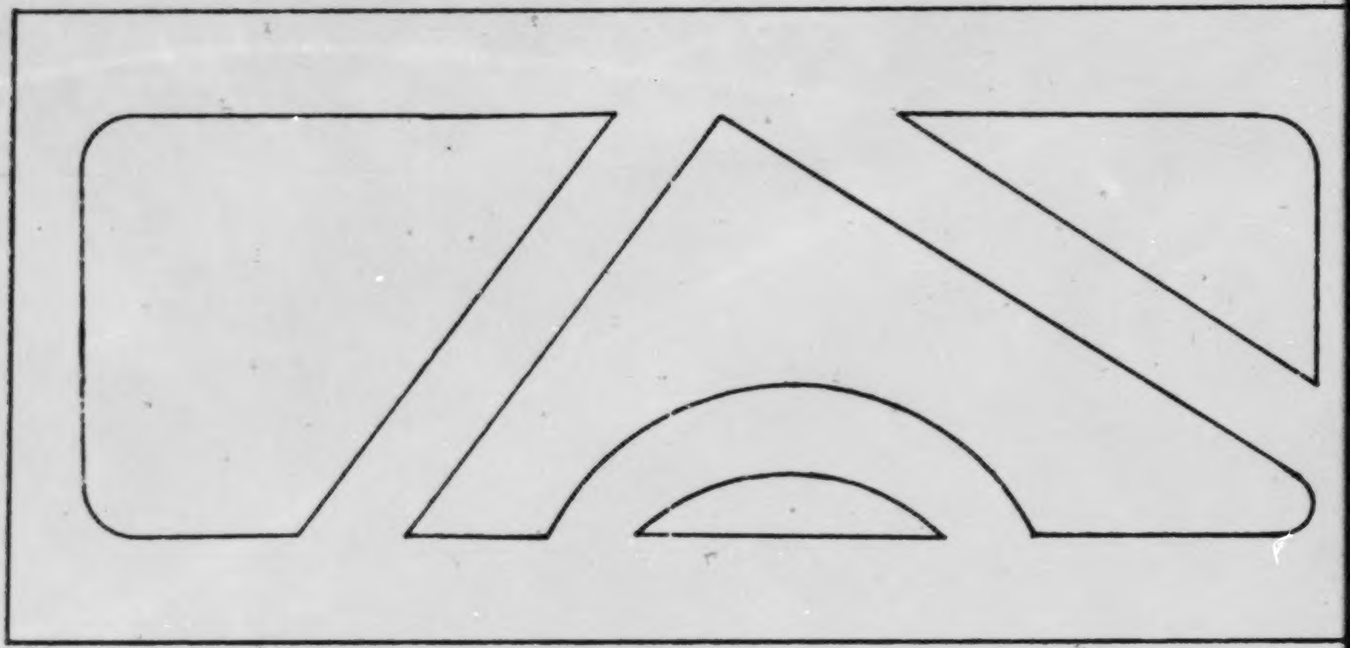


EXHIBIT #C-9-1

EMERGENCY VEHICLE OPERATION:
STED LAYOUT FOR A RECTANGULAR PHYSICAL FACILITY

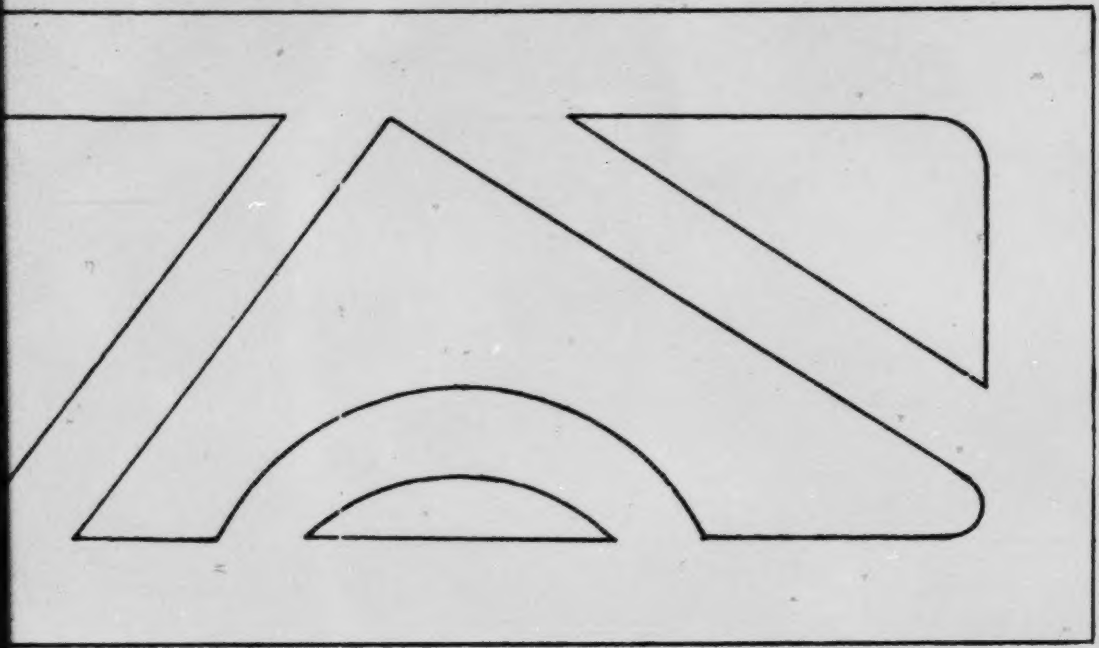


EXHIBIT #C-9-1

EMERGENCY VEHICLE OPERATION:
LAYOUT FOR A RECTANGULAR PHYSICAL FACILITY

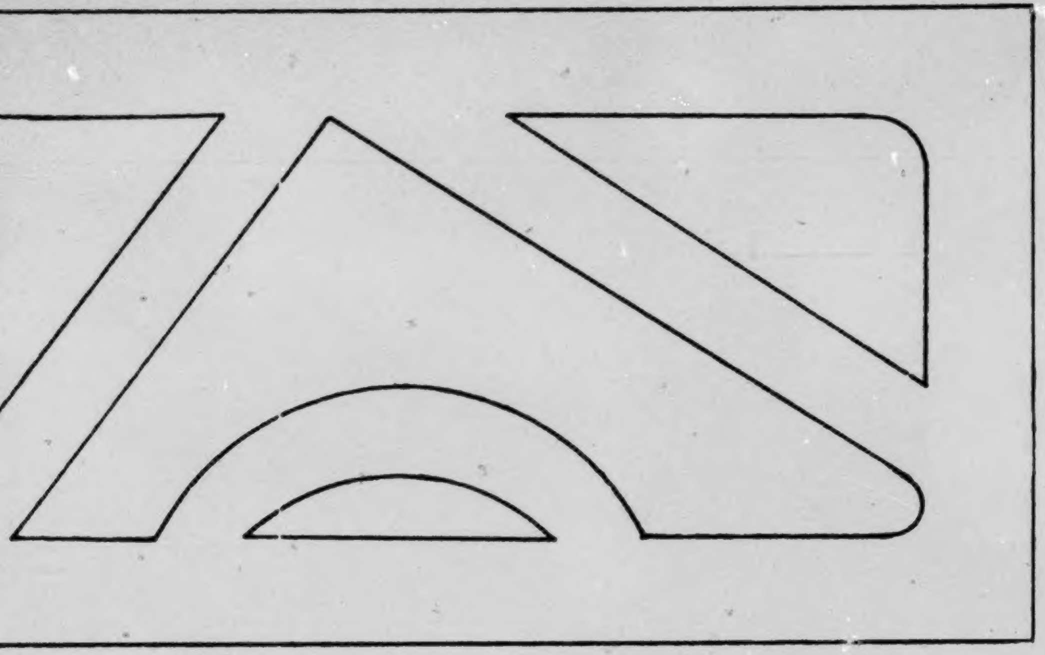


EXHIBIT #C-9-2

EMERGENCY VEHICLE OPERATION:
SUGGESTED LAYOUT FOR A SQUARE PHYSICAL FACILITY

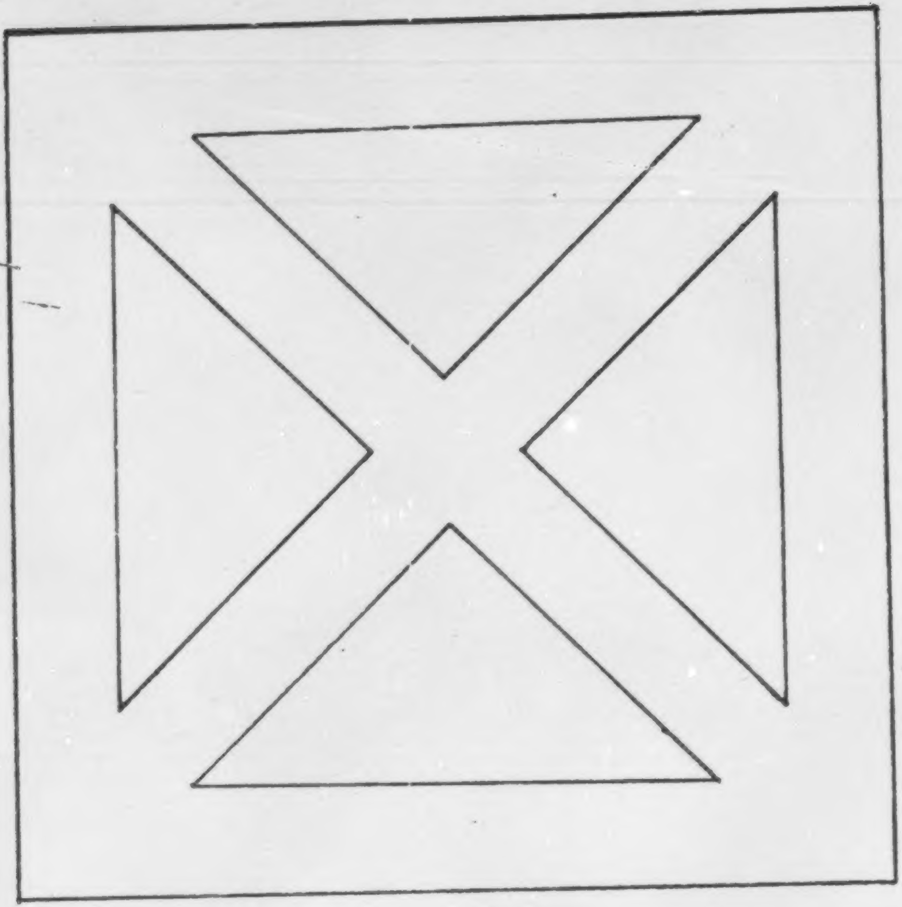


EXHIBIT #C-9-2

EMERGENCY VEHICLE OPERATION:

SUGGESTED LAYOUT FOR A SQUARE PHYSICAL FACILITY

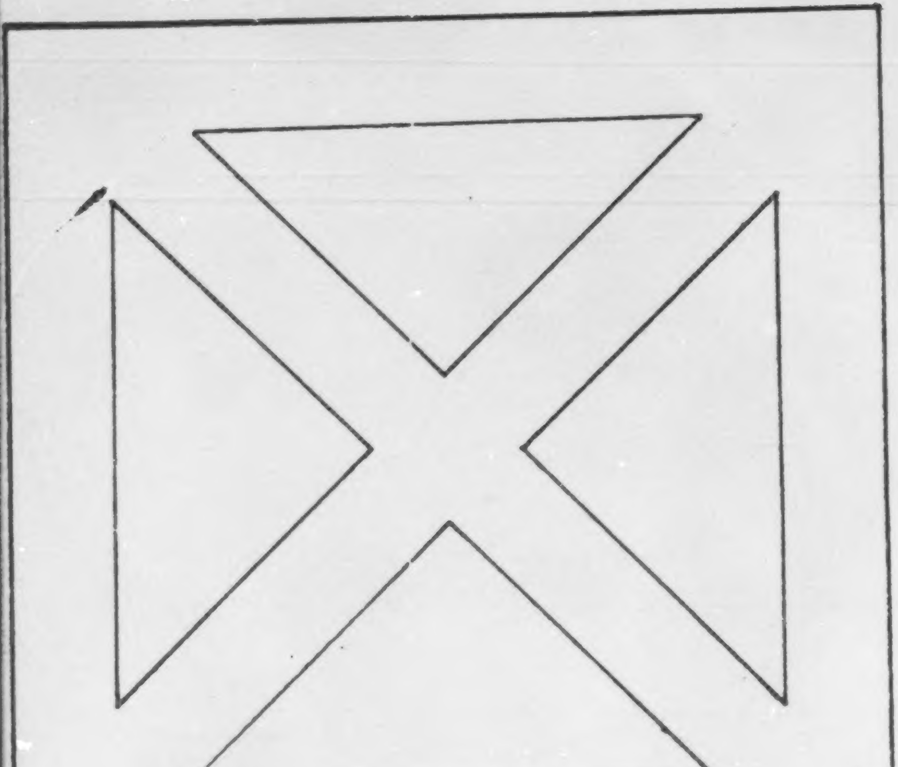


EXHIBIT #B-12-3

EMERGENCY VEHICLE OPERATION:

SUGGESTED LAYOUT FOR A SHOPPING CENTER PARKING LOT PHYSICAL FACILTTY

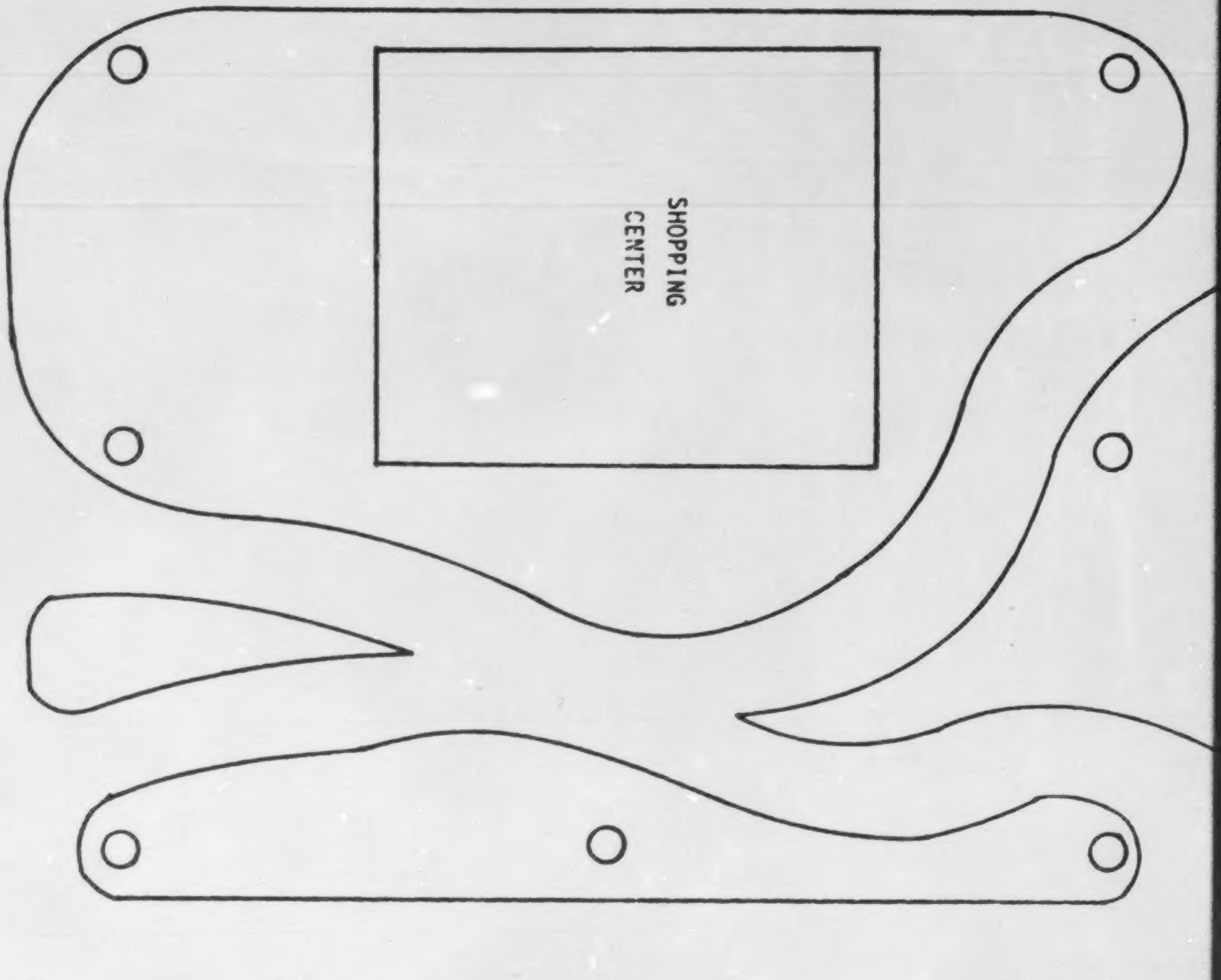

SHOPPING CENTER

EXHIBIT #B-12-3

EMERGENCY VEHICLE OPERATION:

LAYOUT FOR A SHOPPING CENTER PARKING LOT PHYSICAL FACILITTY

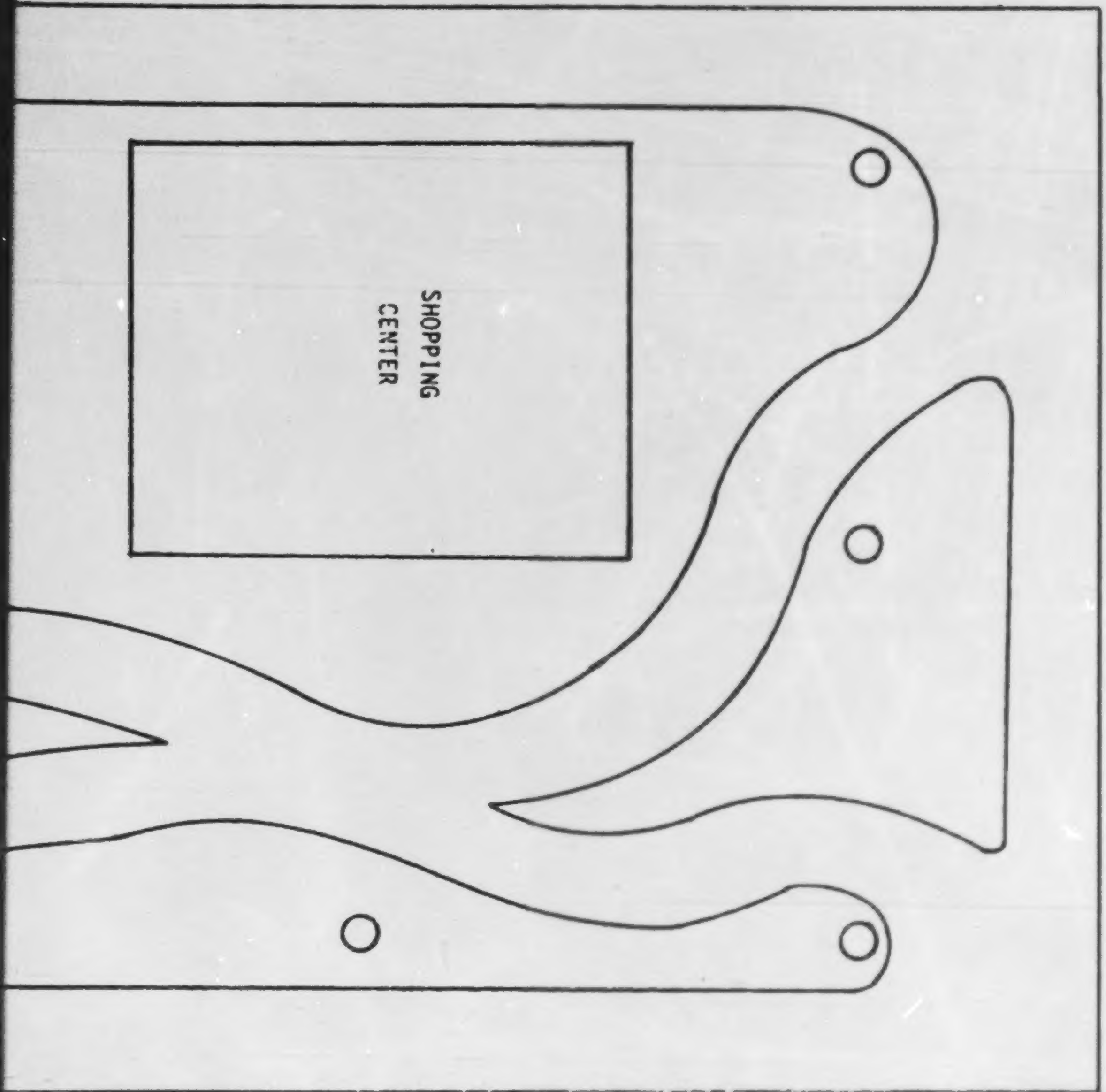
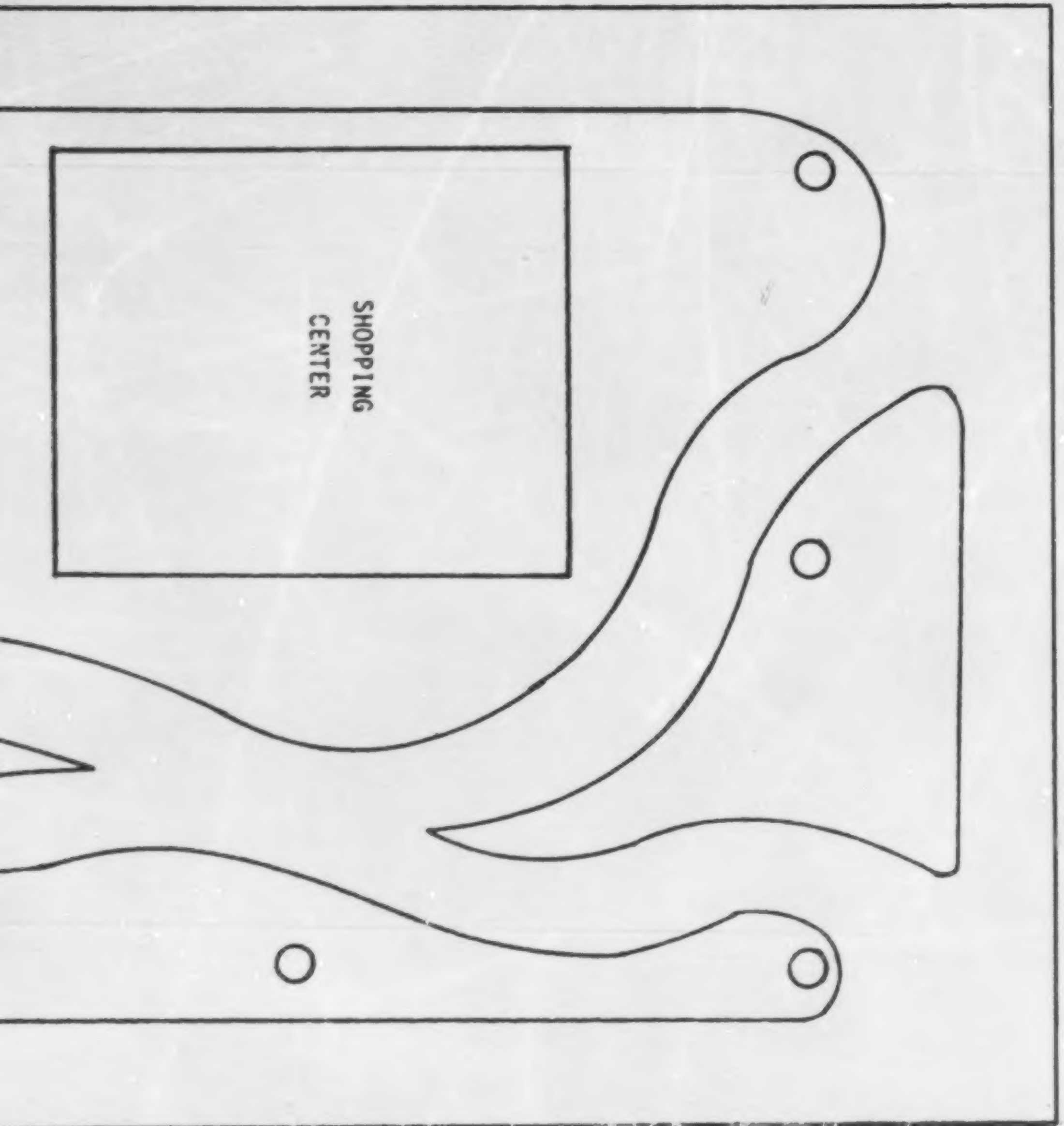

SHOPPING CENTER

EXHIBIT #B-12-3

EMERGENCY VEHICLE OPERATION:

UT FOR A SHOPPING CENTER PARKING LOT PHYSICAL FACILTTY


SHOPPING CENTER

CHAPTER SIX

FACILITIES, EQUIPMENT, AND RESOURCES

CHAPTER SIX

FACILITIES, EQUIPMENT, AND RESOURCES

INTRODUCTION

This section of the manual provides guidance for the process of actually setting-up an emergency vehicle operator's course. Included in this discussion are details relative to the physical resources and equipment which will be required, as well as a glossary of terms and bibliography of materials which will be essential in the classroom instruction phase of the training.

(A) PHYSICAL REQUIREMENTS

It is anticipated that EVOC training in Virginia, consisting of both the classroom lectures and driving exercises discussed in Chapters Two, Three, Four, and Five will be held at various regional facilities throughout the state. But careful consideration must be given to the type of physical area on which the practical, on-range work will be performed.

(1) Site Selection

The location of the classroom close to the driving range is recommended. In most situations, existing sites will likely be used, with the following as possibilities: Large parking lots, airport runways and taxiways, multi-vehicle driving ranges, and motor speedways.

Regardless of the area selected, specific safety precautions must be observed:[1]

--The area must be flat, free of dips or bumps, and with sufficient grade to allow water run-off.

--The driving and surrounding area must be free of curbing and obstacles.

---

[1] Advanced Driver Education Course (Milford, Michigan: General Motors Proving Grounds, 1971), pp. 4, 7.

--The driving area should be constructed of a high quality paving material, such as asphalt or concrete. (For fire training, specific attention must be paid to the paving material in order to prevent heavy apparatus from sinking into the surface).

--A minimum of fifty (50) feet between exercises should be maintained if more than one vehicle is operating in the area.

--Speeds must be adjusted to fit the size of the driving area and the number of vehicles accommodated. Most exercises can be run effectively at 25 mph, unless otherwise specified.

--Any time that more than one vehicle is in operation, the vehicles should be equipped with radios and coordinated by a central control.

(2) Site Preparation

Prior to the physical layout of the range, it is recommended that the site be evaluated for safety hazards. All hazards should be removed, or if this is impossible, additional warning devices should be placed near the hazards, and if necessary, hay bales can be located around the hazards.

If the possibility exists that curiosity-seekers will enter the driving area, special precautions must be taken to restrict their movement and keep them away from the driving range.

(3) Range Layout

It is recommended that a scale diagram be made of the area prior to course implementation in order to accurately position each exercise and make maximum use of available space. This diagram should be made well in advance of the actual exercise layout, and more than one diagram should be made to cover any last-minute changes which might occur or unforeseen situations.

The physical layout of the exercises should proceed as follows:

- --Make preliminary measurement of the exercise block.
- --Maintain fifty (50) feet between each exercise block.
- --Lay entire range out in exercise blocks.
- --Return to each exercise block and mark the respective position of the cones with chalk (temporarily).
- --Position the cones on the chalk and drive vehicle through the course.
- --Make any necessary adjustments and mark permanent cone position with spray paint.

If specialized maneuvers are to be conducted, the location of cones may be the same as for those exercises previously marked. Therefore, it is recommended that different colors of spray paint be used for marking cone locations of various exercises in the same area to clarify the exercise and expedite its set-up.

(B) EQUIPMENT AND MATERIALS

Appropriate, quality equipment is essential for conducting an EVOC training program. Basic equipment needed is as follows:

- Student safety equipment
  - --Safety helmets.
  - --Seat and shoulder straps.
- Instructor equipment
  - --Stop watches.
  - --Tire gauges (air pressure and tread depth).
  - --Clip boards.
  - --Whistles.
  - --Measuring tape (12' approximately).
  - --Chalk.
- Range equipment
  - --Traffic cones (approximately 200).
  - --One hundred-foot measuring tapes.
  - --Spray paint of various colors.
  - --Two-way radio system.
  - --Radar.
  - --Public address system.
  - --Cinder blocks; curb simulators.
  - --Five-foot poles with caution flags.
  - --Hay bales (if necessary).
  - --Heavy push brooms.
  - --Warning signs for curiosity-seekers.
  - --Van or truck to transport equipment.
  - --Interior/exterior vehicle numbers for student identification.
  - --Tape player and tapes for siren simulation.

It is recommended that the student safety equipment, instructor equipment, range equipment, a van, and at least one four-door sedan be purchased to insure availability and to reduce the possibility of last-minute improvising at the range site.

Participating agency vehicles can be used for the on-range portion of the training. In addition, it is advisable to take advantage of all manufacturer options which provide for increased capacity and performance; for example:[2]

--Heavy duty suspensions, disc brakes, and wheels to provide added durability.

--High performance power train to obtain speeds in short distances. (A high displacement engine, three-speed automatic transmission, and an axle ratio in the range of 3.42 to 1 are recommended).

--Air conditioning to provide a better teaching/learning environment during hot weather.

--Power seats to give greater control in conforming to people of various sizes and shapes.

--Power steering to reduce fatigue. (Power windows and power door locks are also an added convenience).

The use of a van for equipment hauling and a gurney will be needed for EVOC training of emergency medical service personnel.

In the EVOC training of fire personnel, rental trucks can be used if participating agency vehicles are unavailable.

The practice of participating agencies volunteering the use of their vehicles should be encouraged. Vehicle care and maintenance should be stressed, and the following daily inspection (see Exhibit D-1) should be performed on each vehicle:[3]

- Tires
    --Tread depth.
    --Inflation pressure.
    --Checks, cracks, and cuts.
    --Rim damage.
- Wheel lug nuts (proper torque).
- Engine compartment
    --Oil level.
    --Coolant level

---

[2] Evasive and Emergency Curriculum for Driver Education (Carbondale, Illinois: Southern Illinois University, 1974), p. 6.

[3] Ibid.

--Accessory belts.

--Power steering fluid level.

- Interior compartment

  --Brake operation.

  --Steering system.

  --Restraints.

  --Two-way radio system.

  --Removal of all loose items.

- Trunk compartment

  --Spare tire and jack secured.

  --Removal of all loose items.

EXHIBIT #D-1

DAILY INSPECTION SHEET FOR DRIVING INSTRUCTORS

Tires

Tire tread depth ______________________________ ☐
Inflation pressure ______________________________ ☐
Checks, cracks, cuts ______________________________ ☐

Wheels

Rim damage ______________________________ ☐
Lug nuts ______________________________ ☐

Engine compartment

Oil level ______________________________ ☐
Coolant level ______________________________ ☐
Brake fluid level ______________________________ ☐
Battery water level ______________________________ ☐
Accessory belts ______________________________ ☐
Power steering fluid level ______________________________ ☐

Driver and passenger compartment

Brake operation ______________________________ ☐
Steering system ______________________________ ☐
Restraint system ______________________________ ☐
Two-way radio system ______________________________ ☐
Loose objects secured ______________________________ ☐

Trunk compartment

Spare tire and jack secured ______________________________ ☐
All unsecured items removed ______________________________ ☐

Tank

Check fuel level ______________________________ ☐

SOURCE: Evasive and Emergency Curriculum for Driver Education (Carbondale, Illinois: Southern Illinois University, 1974).

(C) GLOSSARY OF TERMS

The following represents a summary of the important terms to remember from both the classroom instruction portion of the training contained in Chapter Two and the on-range instruction contained in Chapters Three, Four, and Five.

- APEX

That point on a curve where the vehicle stops going into the curve and starts to exit the turn. At this point, the vehicle should be closest to the inside edge of the turn.

- BANKED PAVEMENT

Also referred to as "superelevation", this is an engineering design technique to increase the traction (friction) of the vehicle to the road surface during cornering. It is a condition in which one side of the roadway is elevated, banked, or higher than the opposite side and normally occurs during a curve. If, on a left-hand curve, the right portion of the roadway is higher than the left, it is known as positive banking. If in the same left-hand curve, the left side is higher than the right, it is known as negative banking and would decrease the friction (drag factor) of the roadway.

- CENTRIFUGAL FORCE

A force which acts or impels an object out from a center of rotation. This is the effect of under-steering.

- CENTRIPETAL FORCE

A force which acts or impels an object inward toward a center of rotation. This is the effect of over-steering.

- CROWNED PAVEMENT

A roadway on which the center portion is higher than either of its sides.

- DRAG FACTOR

A number which has been assigned scientifically to describe the slipperiness of a road surface. The higher the drag factor, the greater the stopping resistance.

- FORCE OF IMPACT

The amount of energy which is created and distributed throughout a vehicle and/or object during a collision. Damage is the most common indicator of the force of impact.

- FRICTION

The resistance of one object against another; force which opposes motion. Traction (friction) between the tire and road surface enables a vehicle to start, turn, continue movement, or stop.

- GRAVITY

The natural pull of the earth. Since the pull of gravity is a measure of acceleration/deceleration, other acceleration/deceleration due to stopping or high speed turns are measured as multiples or fractions of gravity. One "G" equals the object's own weight; 1.5 "G's" equal one-and-one-half times the object's weight; measured by 32.2 feet per second.

- HYDROPLANING

A condition which is created by the speed of an object actually riding on a surface of water; for example, waterskiing. At certain speeds, and depending on the design and condition of the tires, a vehicle's tires can be lifted from the hard road surface and ride on a water surface, resulting in decreased steering and braking control.

- INERTIA

A property of matter by which it remains at rest or in uniform motion in the same straight line unless acted upon by some external force. A vehicle will remain at rest until the operator presses the accelerator and will continue in a straight line until the steering wheel is turned or the brakes are applied. Sources affecting vehicle inertia include engine, steering wheel, brakes, or collision.

- KINESTHETICS

The sense of active movement. When parts of the body move, receptors in the muscles, tendons, and joints of the body are stimulated by stretch and pressure. This is the most important sense in determining and controlling both body position and movement.

- KINETIC ENERGY

Energy associated with movement--the energy of motion. It is a measure of the combination of the size and speed of an object. For example, a sports car (small, but fast) speeding down a road may have the same kinetic energy as a large truck going up a hill (large, but slow). the formula for determining kinetic energy is $KE = 1/2\ mV^2$, where m=mass (weight) and V=velocity (speed).

- NARCOLEPSY

A condition characterized by brief attacks of deep sleep; irresistible drowsiness.

- PHOTOTROPISM

A tendency for the eye, especially when fatigued, to be attracted to light.

- PHYSIOLOGICAL

Relating to characteristics of an organism's healthy and/or normal functioning.

- RADIUS

A measurement from the center of a circle to any point on the circle; one-half of the diameter (which is a line joining any two points of a circle and passing through the center of the circle).

- RADIUS OF A CURVE

The radius of a turn, measured at the middle of the turn. The formula for figuring the radius of a curve is $R = \frac{C^2}{8M} + \frac{M}{2}$, where C=chord, and M=middle ordinate.

- TILLER

Refers to either the trailer portion of a fire tractor trailer apparatus or to the operator of that portion of the fire apparatus.

- VELOCITY

Speed with direction of travel specified. A pair of vehicles hitting head-on at 25 mph each would have had the same speed but different velocities, as one was traveling north and the other south.

(D) INSTRUCTIONAL RESOURCES

(1) Texts and References

Aaron, James E. Evasive and Emergency Curriculum for Driver Education. Carbondale, Illinois: Southern Illinois University, July, 1974.

Advanced Driver Education Course Training Manual. Milford, Michigan: General Motors Proving Grounds, 1971.

Advanced Driver Training. Mansfield, Ohio: Highway Safety Foundation.

American Academy of Orthopaedic Surgeons. Emergency Care and Transportation of the Sick and Injured. Menasha, Wisconsin: George Banta Company, 1971.

American Automobile Association. Sportsmanlike Driving. New York: McGraw-Hill Book Company (current edition).

"Automotive Driving Rodeo." Driver, June, 1972, pp. 10-14.

Ayoob, Massad F. "Skid Control Training for Police." Law and Order, Volume 22, #11, November, 1974, pp. 28-42.

Bishop, Richard W. et al. Driving: A Task Analysis Approach. New York: Rand McNally and Company, 1975.

Carpenter, Ken, and Newcomb, F.D. Emergency Vehicle Accident Involvement: 1969-1970. New York: Division of Research and Development, State Department of Motor Vehicles, 1972.

Code of Virginia.

Concepts. Aetna Life and Casualty, Volume 7, #1, 1974.

Daugherty, Edward E. Safety in Police Pursuit Driving. Springfield, Illinois: Charles C. Thomas, 1961.

Defensive Driving Course Instructors' Manual. Chicago: National Safety Council (current edition).

Driver Training: Fire Department Driver Training Manual of Instruction. Sacramento, California: State Department of Education, 1972.

"Emergency Driving; Traffic Control; Vehicle Maintenance." Emergency. February, 1975.

Emergency Vehicle Driver Training in Virginia. Richmond, Virginia: Wilbur Smith and Associates, 1973.

Evasive and Emergency Curriculum for Driver Education. Carbondale, Illinois: Safety Center, Southern Illinois University, 1974.

Fennessy, Edmund F. et al. A Study of the Problem of Hot Pursuit by the Police. Hartford, Connecticut: The Center for the Environment of Man, 1970.

Grant, Harvey, and Murray, Robert. Emergency Care. Bowie, Maryland: Robert J. Brady Company, 1971.

Hanlon, Robert F. Defensive Driving in Fire Departments. Chicago: Chicago Fire Department, March 29, 1969.

__________. Safe Driving of Ambulances. Chicago: Chicago Fire Department, October 29, 1969.

Humphreys, Noel. "Do You Need A Refresher Course in Driving?" Parade, October 13, 1974, p. 9.

"Hydroplaning." Driver, February, 1974, pp. 1-6.

International Association of Chiefs of Police. Training Key #92. Gaithersburg, Maryland: International Association of Chiefs of Police.

Jones, E.W. Police Pursuit Driving. Raleigh, North Carolina: State Department of Motor Vehicles (current edition).

Kinsey, William R., and Woolfenden, James C. Defensive Driving Training Bulletin. Washington, D.C.: United States Park Police.

Law Enforcement Training Course. Champaign, Illinois: Police Training Institute, University of Illinois.

National Safety Council. Accident Facts. Chicago: National Safety Council (current edition).

Norbye, Jan P. "How You Can Be an Expert Winter Driver." Popular Science, December, 1968, pp. 52-57.

"Post Graduate Driving." Driver, March, 1975, pp. 1-7.

Pursuit in Traffic Law Enforcement. Evanston, Illinois: Northwestern University, 1967.

"Return to Cape May." Driver, December, 1973, pp. 1-6.

"Reviewing the Basics." Driver, October, 1974, pp. 1-7.

Ruch, Floyd L. Psychology and Life. Chicago: Scott, Foresman, and Company, 1963.

Selected Motor Vehicle Laws of Virginia. Charlottesville, Virginia: The Michie Company (current edition).

Traffic Accident Investigator's Manual for Police. Evanston, Illinois: Northwestern University, 1963.

Virginia Crash Facts. Richmond, Virginia: Department of State Police (current edition).

Walker, Larry. Emergency Vehicle Operation Course. Anne Arundel, Maryland: Anne Arundel County Police Department, 1974.

Waller, Julian A. Medical Impairment to Driving. Springfield, Illinois: Charles C. Thomas, Publishers, 1973.

(2) Audiovisuals

- GENERAL

"Anatomy of An Accident"

"Automobile Tire Hydroplaning"

"Defensive Driving Tactics"

"Emergencies in the Making"

"The Final Factor"

"Handling the Unexpected"

"Matter of Judgment"

"New Way to Drive"

"Safety Times Three"

"Space Driving Tactics"

"Speed and Reflexes"

"System for the Road"

All of the above are available through the Highway Safety Division of Virginia, 300 Turner Road, Richmond, VA 23225 (Phone: 804-276-9600).

"Defensive Driving I, II, III, IV" (four separate films)

Available through Motorola Teleprograms.

- DRIVER ATTITUDE

"Death Driver"

"Motor Mania"

"Mr. Finley's Feelings"

All of the above are available through the Highway Safety Division of Virginia, 300 Turner Road, Richmond, VA 23225 (Phone: 804-276-9600).

- TRUCK DRIVING SAFETY

"Adapting to Conditions"

"Carrier or Killer"

"Champions of the Highway"

"More than Manners"

"On the Spot"

"Split Second Decisions"

"Truck Drivers Only"

All of the above are available through the Highway Safety Division of Virginia, 300 Turner Road, Richmond, VA 23225 (Phone: 804-276-9600).

- FIRE DRIVER TRAINING

"Emergency Response"

"Fire Apparatus--Preparation, Steering, Gear Shifting" (three separate films)

All of the above are available through the Fire Training Area Supervisor, State Fire Training Center, P.O. Box 651, Ashland, VA 23005.

"Fire Truck Safety"

Available through Film Communications, 5451 Laurel Canyon Boulevard, North Hollywood, California 91607.

(3) Pamphlets and Brochures

"Avoid Rear End Collisions!" Safety Department, Allstate Insurance Companies.

"Avoiding the Skid." #C-9625D. Hartford, Connecticut: The Travele Insurance Companies.

"Change Your Driving at Night." #L28 A-3. Safety Department, Allsta Insurance Companies.

"Does Your Car Suffer from Carneglectitus?" #AB-18. Hartford, Connecticut: The Travelers Insurance Companies.

"Intersection Accidents Can be Avoided." #AB-19. Hartford, Connecticut: The Travelers Insurance Companies.

"How to Go on Ice and Snow." #3387. Falls Church, Virginia: American Automobile Association, 8111 Gatehouse Road (22042).

"One Good Turn Deserves Another." #3290. Falls Church, Virginia: American Automobile Association, 8111 Gatehouse Road (22042).

"Open Your Eyes to Vision in Highway Safety." #H23-372. St. Louis, Missouri: American Optometric Association, 7000 Chippewa Street (63119).

"Pointers for Pleasant and Safe Driving." #3380. Falls Church, Virginia: American Automobile Association, 8111 Gatehouse Road (22042).

"When You're in the Driver's Seat." #AB-12. Hartford, Connecticut: The Travelers Insurance Companies.

APPENDIX:

DRIVER EVALUATION FORM

SOURCE: Northern Virginia Police Academy

DRIVER EVALUATION FORM

NAME________________________________ STUDENT #_____ SESSION_____

DEPARTMENT____

DATE___________________ INSTRUCTOR_______________________________

COURSE GRADE___________

Driving experience--list years and type(s) of vehicles____________

____

____

____

____

Have you ever been involved in a motor vehicle crash?_____________

If so, describe briefly:____

____

____

____

____

I. DEFENSIVE DRIVING

(A) OFFSET ALLEY

Forward time course
(seconds or less)

	Outstanding	Above average	Acceptable	Below average	Not acceptable
Steering Control					
Throttle Control					
Smoothness					

Time__________

Reverse time course
(seconds or less)

Steering Control					
Throttle Control					
Smoothness					

Time__________

COMMENTS:

SCORE__________________

(B) PARALLEL PARKING

Time course
(seconds or less)

Right side	Acceptable	Not acceptable
Steering control		
Position		

Left side

Steering control		
Position		

Time__________

COMMENTS:

SCORE____________________

(C) TURN-AROUND MANEUVERS

Time course
(seconds or less; two seconds added for each cone/flag hit)

	Outstanding	Above average	Acceptable	Below average	Not acceptable
Smoothness					
Throttle control					
Use of brakes					

TIME: ______Seconds, plus ______Penalty = ______Seconds

COMMENTS:

SCORE______________

(D) CONE JUDGMENT (LIGHT BULB, BACKING EXERCISE, Y TURN)

Time course

(seconds or less)

COMMENTS (PENALTY):

COMMENTS:

TIME: _____Seconds, plus _____Penalty = _____Seconds

(2 second penalty per cone struck)

SCORE_______________

(E) DOUBLE LANE CHANGE

Outstanding	Above average	Acceptable	Below average	Not acceptable

Throttle control

Score______________

Cone penalty:

0 cones = 100 points
1 cone = 90 points
2 cones = 80 points
3 cones = 70 points
4 cones = fail

Score______________

COMMENTS:

SCORE__________________

II. SPECIALIZED MANEUVERS

(A) SERPENTINE

	Outstanding	Above average	Acceptable	Below average	Not acceptable
Speed control					
Hit cones					
Smoothness					

COMMENTS:

SCORE________________

(B) REACTION

	Outstanding	Above average	Acceptable	Below average	Not acceptable
Speed control					
Steering control					
Smoothness					
Hit cones					
Anticipation					

COMMENTS:

SCORE_____________

(C) CONTROLLED BRAKING

	Outstanding	Above average	Acceptable	Below average	Not acceptable
Speed control					
Steering control					
Smoothness					
Braking control					
Cones hit					
Anticipation					

COMMENTS:

SCORE____________________

III. EMERGENCY VEHICLE OPERATION

Vehicle operation	180° Curve	Gravel Area	S Turns
Road position			
Speed in			
Apex			
Speed out			
Control (hand position)			
Brakes			
Total average			

Radio Procedures

COMMENTS:

GENERAL COMMENTS:

IV. VIOLATOR PURSUIT

	Outstanding	Above average	Acceptable	Below average	Not acceptable
Road position					
Speed in					
Apex					
Speed out					
Control (hand position)					
Brakes					
Vehicle position					
Emergency brake					
Judgment					
Approach					
Total average					

COMMENTS:

SUMMARY EVALUATIONS

I. DEFENSIVE DRIVING SKILLS (30%)

(A) OFFSET ALLEY

(B) PARALLEL PARKING

(C) TURN-AROUND MANEUVERS

(D) CONE JUDGMENT

(E) DOUBLE LANE CHANGE

TOTAL

II. SPECIALIZED MANEUVERS (60%)

(A) SERPENTINE

(B) REACTION

(C) CONTROLLED BRAKING

TOTAL

III. EMERGENCY VEHICLE OPERATION

IV. VIOLATOR PURSUIT

V. WRITTEN EXAMS (10%)

(A) DEFENSIVE DRIVING EXAM

(B) EVOC OPERATION EXAM

TOTAL

VI. FINAL AVERAGE